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ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/6 4/2  
12828F LANCE, MISSILE NUMBER 2222, ROUND NUMBER 337-DSL, 11 OCT--ETC(U)  
OCT 79

UNCLASSIFIED

ERADCOM/ASL-DR-1070

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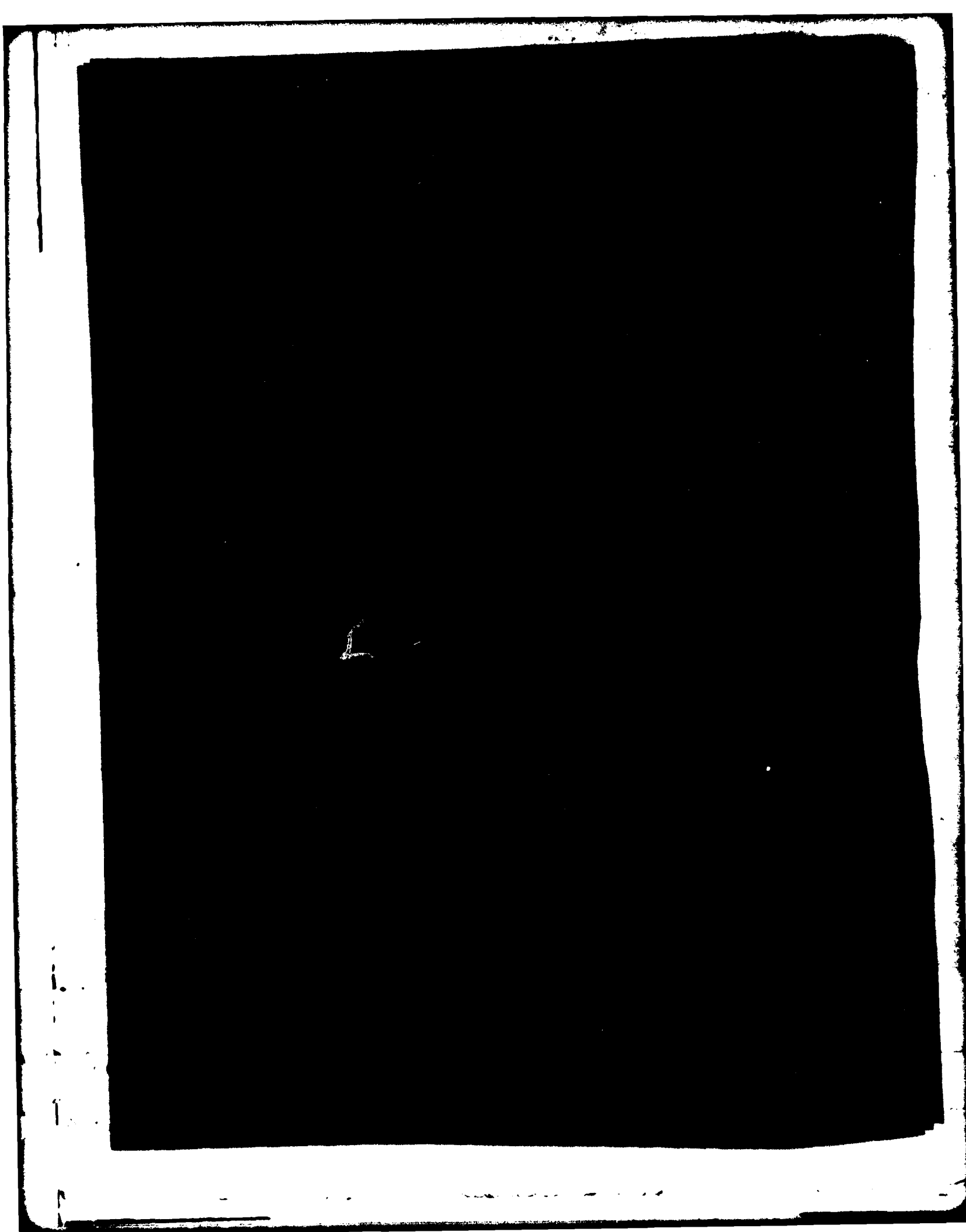
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| 1. REPORT NUMBER<br>DR-1070  | 2. GOVT ACCESSION NO.<br>Number | 3. RECIPIENT'S CATALOG NUMBER                                  |
| 4. TITLE (and Subtitle)<br>12828F LANCE<br>Missile #2222,<br>Round No 337-DSL, 11 October 1979.  |                                 | 5. TYPE OF REPORT & PERIOD COVERED                             |
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| 19. KEY WORDS (Continue on reverse side if necessary and identify by block number)<br>1. Ballistics<br>2. Meteorology<br>3. Wind   |                                 |  |
| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number)<br>Meteorological data gathered for the launching of 12828F LANCE, Missile<br>Number 2222, Round Number 337-DSL are presented in tabular form. |                                 |  |

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## INTRODUCTION

12828F LANCE, Missile Number 2222, Round Number 337-DSL, was launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 0800 MDT, 11 October 1979. The scheduled launch time was 0800 MDT.

## DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

### 1. Observations

#### a. Surface

(1) Standard surface observations to include pressure, temperature ( $^{\circ}\text{C}$ ), relative humidity, dew point ( $^{\circ}\text{C}$ ), density ( $\text{gm}/\text{m}^3$ ), wind direction and speed, and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

#### b. Upper Air

(1) Low level wind data were obtained from RAPTS T-9 pibal observation at:

### SITE AND ALTITUDE

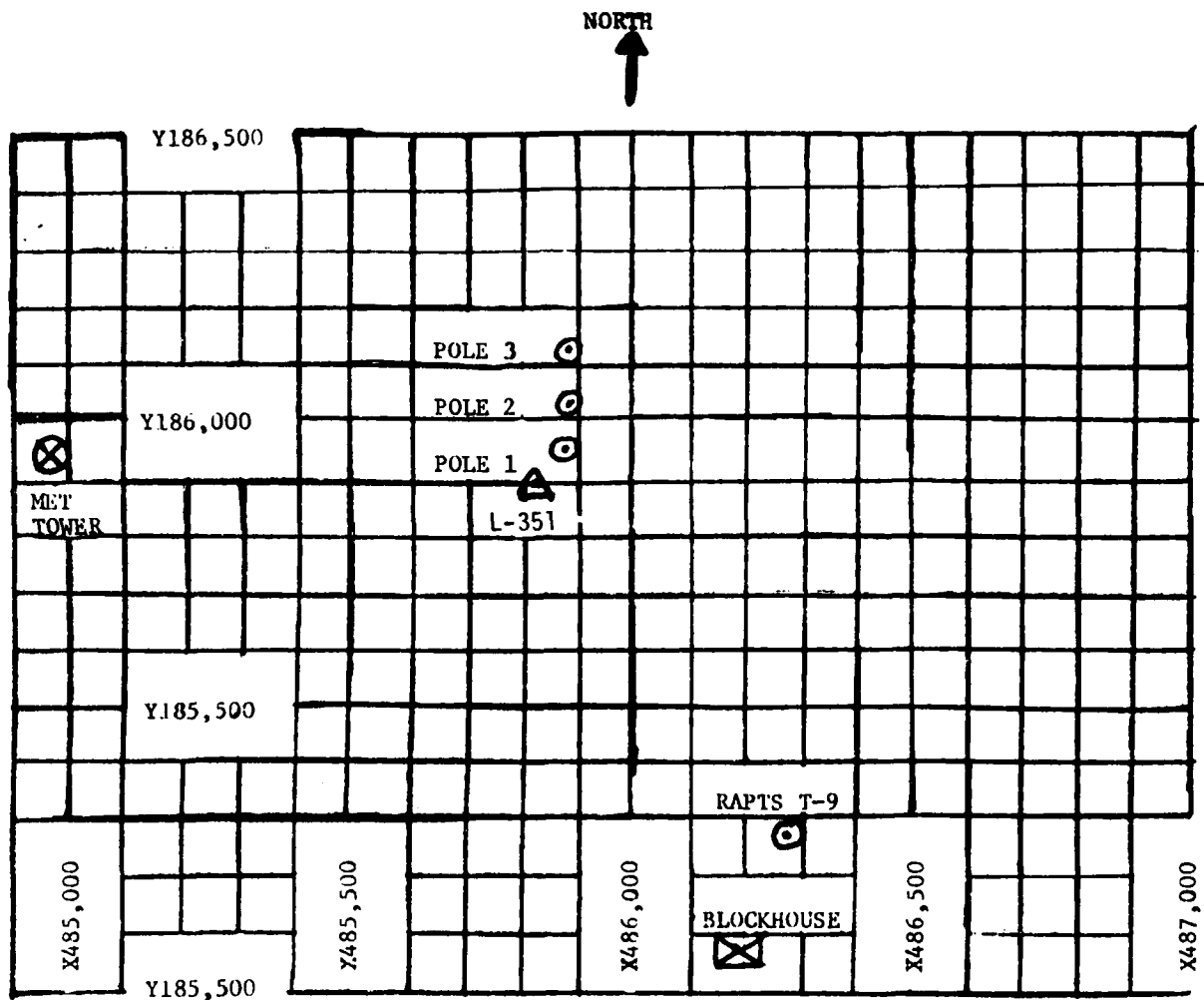
LC-33 3000 Meters

(2) Air structure data (rawinsonde) were collected at the following Met Sites. Data were collected from surface to as high as possible in 500-foot increments.

### SITE AND TIME

WSD 0650 MST  
APA 0600 MST  
NW30 0650 MST

|                    |      |
|--------------------|------|
| Accession For      |      |
| WFS                | QMA1 |
| DOC TAB            |      |
| Unannounced        |      |
| Justification      |      |
| By                 |      |
| Distribution       |      |
| Availability Codes |      |
| Avail and/or       |      |
| Special            |      |
| Dist               | 923  |
|                    | KIF  |



1. MET TOWER - 4 Bendix Model T-20 Anemometers at 12 ft, 62 ft, 102 ft, and 202 ft with E/A recorders.
2. POLE ANEMOMETER - Bendix Model T-120 with E/A recorders.
  - (a) Pole #1 - 38.7 ft
  - (b) Pole #2 - 53.0 ft
  - (c) Pole #3 - 83.6 ft
3. RAPTS T-9 Radar Automatic Pilot-Balloon Tracking System T-9 Radar.



TABLE 1. Surface Observations taken at 0800 MDT,  
11 October 1979, at LC-33, 12828F LANCE,  
Missile No. 2222, Round No. 337-DSL.

|                   |         |                   |
|-------------------|---------|-------------------|
| ELEVATION         | 3977.30 | FT/MSL            |
| PRESSURE          | 881.6   | MBS               |
| TEMPERATURE       | 8.5     | °C                |
| RELATIVE HUMIDITY | 61      | %                 |
| DEW POINT         | 1.4     | °C                |
| DENSITY           | 1086.5  | GM/M <sup>3</sup> |
| WIND SPEED        | CALM    | KTS               |
| WIND DIRECTION    |         | DEGREES           |
| CLOUD COVER       | CLEAR   |                   |

# LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

| POLE #1       |            |              | POLE #2       |            |              | POLE #3       |            |              |
|---------------|------------|--------------|---------------|------------|--------------|---------------|------------|--------------|
| T-TIME<br>SEC | DIR<br>DEG | SPEED<br>KTS | T-TIME<br>SEC | DIR<br>DEG | SPEED<br>KTS | T-TIME<br>SEC | DIR<br>DEG | SPEED<br>KTS |
| -30           | 185        | 04           | -30           | 187        | 03           | -30           | 180        | 04           |
| -20           | 185        | 04           | -20           | 183        | 02           | -20           | 180        | 04           |
| -10           | 185        | 04           | -10           | 183        | 03           | -10           | 180        | 04           |
| 0.0           | 185        | 04           | 0.0           | 184        | 03           | 0.0           | 180        | 04           |
| +10           | 186        | 04           | +10           | 184        | 03           | +10           | 180        | 04           |

POLE #1 = X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL

POLE #2 = X485,874.93 Y186,012.00 H4033.57 53.0 ft AGL

POLE #3 = X485,877.29 Y186,116.06 H4063.92 83.6 ft AGL

## TABLE 2

TYPE 12828F LANCE MISSILE NO. 2222 ROUND NO. 337-DSL

LAUNCHED FROM LC-33 DATE 11 October 1979 TIME 0800 MDT

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH.

LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

| LEVEL #1<br>12 Feet  |            |              | LEVEL #2<br>62 Feet  |            |              |
|----------------------|------------|--------------|----------------------|------------|--------------|
| T-TIME<br>SEC        | DIR<br>DEG | SPEED<br>KTS | T-TIME<br>SEC        | DIR<br>DEG | SPEED<br>KTS |
| -30                  | MISG       | 03           | -30                  | 190        | 01           |
| -20                  | MISG       | 02           | -20                  | 190        | 01           |
| -10                  | MISG       | 03           | -10                  | 190        | 01           |
| 0.0                  | MISG       | 02           | 0.0                  | 190        | 01           |
| +10                  | MISG       | 02           | +10                  | 190        | 01           |
| LEVEL #3<br>102 Feet |            |              | LEVEL #4<br>202 Feet |            |              |
| T-TIME<br>SEC        | DIR<br>DEG | SPEED<br>KTS | T-TIME<br>SEC        | DIR<br>DEG | SPEED<br>KTS |
| -30                  | 180        | 02           | -30                  | 185        | 02           |
| -20                  | 182        | 02           | -20                  | 185        | 02           |
| -10                  | 182        | 02           | -10                  | 185        | 02           |
| 0.0                  | 182        | 02           | 0.0                  | 185        | 02           |
| +10                  | 182        | 02           | +10                  | 180        | 02           |

WTSM COORDINATES: X484,982.64 Y185,057.73 H3983.00 (base)

TABLE 3

TYPE 12828F LANCE MISSILE NO. 2222 ROUND NO. 337-DSL

LAUNCHED FROM LC-33 DATE 11 October 1979 TIME 0800 MDT

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH.

PILOT BALLOON MEASURED WIND DATA  
(30 meter increments)

TABLE 4

RELEASED FROM LC-33 DATE 11 October 1979 TIME 0750 MDT  
 RELEASE POINT COORDINATES (WSTM) X=486,037.24 Y=182,350.16 H=3977.30  
 MISSILE TYPE 12828F LANCE MISSILE NO. 2222 ROUND NO. 337-DSL  
 MISSILE LAUNCHED FROM LC-33 DATE 11 October 1979 TIME 0800 MDT

NOTE: WIND DIRECTION ARE REFERENCED TO TRUE NORTH

| HEIGHT<br>mtrs AGL | DIRECTION<br>DEGREES | SPEED<br>KTS |
|--------------------|----------------------|--------------|
| SFC                |                      | CALM         |
| 30                 |                      | CALM         |
| 60                 |                      | CALM         |
| 90                 |                      | CALM         |
| 120                |                      | CALM         |
| 150                | 020                  | 02           |
| 180                | 355                  | 03           |
| 210                | 001                  | 05           |
| 240                | 007                  | 07           |
| 270                | 002                  | 07           |
| 300                | 356                  | 07           |
| 330                | 014                  | 06           |
| 360                | 031                  | 05           |
| 390                | 028                  | 05           |
| 420                | 025                  | 04           |
| 450                | 014                  | 04           |
| 480                | 002                  | 03           |
| 510                | 008                  | 03           |

| HEIGHT<br>mtrs AGL | DIRECTION<br>DEGREES | SPEED<br>KTS |
|--------------------|----------------------|--------------|
| 540                | 013                  | 03           |
| 570                | 019                  | 03           |
| 600                | 024                  | 02           |
| 630                | 342                  | 02           |
| 660                | 300                  | 01           |
| 690                | 323                  | 05           |
| 720                | 346                  | 08           |
| 750                | 352                  | 08           |
| 780                | 357                  | 09           |
| 810                | 349                  | 09           |
| 840                | 341                  | 10           |
| 870                | 343                  | 11           |
| 900                | 344                  | 11           |
| 930                | 352                  | 11           |
| 960                | 360                  | 11           |
| 990                | 352                  | 14           |
| 1020               | 344                  | 16           |
| 1050               | 346                  | 16           |

[illegible]

PILOT BALLOON MEASURED WIND DATA  
(30 meter increments)

TABLE 5

RELEASED FROM LC-33 DATE 11 October 1979 TIME 0800 MDT

RELEASE POINT COORDINATES (WSTM) X=486,037.24 Y=182,350.16 H=3977.30

MISSILE TYPE 12828F LANCE MISSILE NO. 2222 ROUND NO. 337-DSL

MISSILE LAUNCHED FROM LC-33 DATE 11 October 1979 TIME 0800 MDT

NOTE: WIND DIRECTION ARE REFERENCED TO TRUE NORTH.

| HEIGHT<br>mtrs AGL | DIRECTION<br>DEGREES | SPEED<br>KTS |
|--------------------|----------------------|--------------|
| SFC                |                      | CALM         |
| 30                 |                      | CALM         |
| 60                 |                      | CALM         |
| 90                 |                      | CALM         |
| 120                |                      | CALM         |
| 150                | 355                  | 03           |
| 180                | 017                  | 05           |
| 210                | 015                  | 06           |
| 240                | 013                  | 07           |
| 270                | 008                  | 06           |
| 300                | 002                  | 06           |
| 330                | 328                  | 06           |
| 360                | 294                  | 05           |
| 390                | 316                  | 05           |
| 420                | 337                  | 06           |
| 450                | 336                  | 04           |
| 480                | 335                  | 03           |
| 510                | 308                  | 02           |

| HEIGHT<br>mtrs AGL | DIRECTION<br>DEGREES | SPEED<br>KTS |
|--------------------|----------------------|--------------|
| 540                | 281                  | 01           |
| 570                | 273                  | 02           |
| 600                | 265                  | 02           |
| 630                | 335                  | 01           |
| 660                |                      | CALM         |
| 690                | 022                  | 02           |
| 720                | 359                  | 04           |
| 750                | 350                  | 07           |
| 780                | 340                  | 10           |
| 810                | 351                  | 10           |
| 840                | 001                  | 10           |
| 870                | 002                  | 10           |
| 900                | 003                  | 10           |
| 930                | 355                  | 11           |
| 960                | 347                  | 11           |
| 990                | 349                  | 13           |
| 1020               | 350                  | 14           |
| 1050               | 353                  | 16           |

[illegible]

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

SIGNIFICANT LEVEL DATA  
2840020410  
WHITE SANDS  
TABLE 6

STATION ALTITUDE 3989.00 FEET MSL  
11 OCT. 79 0650 HRS MST  
ASCENDING 110. 416

| PRESSURE GEOMETRIC<br>ALTITUDE<br>MILLIBARS MSL FEET | TEMPERATURE<br>AIR DEW POINT<br>DEGREES CENTIGRADE | REL. HUM.<br>PERCENT |
|--|--|----------------------|
| 681.5 3989.0   | 7.8 1.2  | 65.0                 |
| 656.9 4775.1   | 22.0 -3.4  | 18.0                 |
| 650.0 5005.1   | 22.0 -5.0  | 15.0                 |
| 611.0 6337.7   | 20.6 -6.7  | 13.0                 |
| 712.2 9902.4   | 12.3 -13.0   | 15.0                 |
| 700.0 10436.5  | 11.0 -15.4   | 14.0                 |
| 654.8 12250.2  | 6.8 -19.7  | 13.0                 |
| 617.6 13824.4  | 5.7 -22.4  | 11.0                 |
| 500.0 19379.3  | -6.1 -31.7   | 11.0                 |
| 464.4 21263.3  | -10.8 -34.0  | 12.0                 |
| 433.2 23009.2  | -14.5 -36.4  | 11.0                 |
| 400.0 24977.3  | -19.5 -42.4  | 11.0                 |
| 339.8 28894.7  | -28.6 -46.9  | 12.0                 |
| 300.0 31705.6  | -36.4  |                      |
| 276.2 33658.6  | -40.0  |                      |
| 250.0 35874.3  | -45.4  |                      |
| 225.4 38122.6  | -51.0  |                      |
| 209.8 39653.3  | -53.0  |                      |
| 200.0 40604.7  | -55.2  |                      |
| 162.8 44898.5  | -64.9  |                      |
| 154.0 46017.6  | -64.3  |                      |
| 150.0 46546.4  | -65.9  |                      |
| 137.0 48253.6  | -69.5  |                      |
| 126.2 49954.1  | -70.9  |                      |
| 118.6 51170.5  | -70.0  |                      |
| 108.0 52998.8  | -72.1  |                      |
| 100.0 54494.2  | -72.1  |                      |
| 94.4 55611.3   | -73.1  |                      |
| 84.8 57637.9   | -72.6  |                      |
| 70.0 61459.4   | -67.0  |                      |
| 61.8 63967.3   | -63.1  |                      |
| 53.8 66800.3   | -63.1  |                      |
| 50.0 68205.0   | -59.7  |                      |
| 42.4 71709.8   | -57.4  |                      |
| 34.5 76019.3   | -57.2  |                      |
| 30.0 78970.5   | -53.1  |                      |
| 27.0 81232.1   | -50.1  |                      |
| 25.0 82895.6   | -50.1  |                      |



UPPER AIR DATA  
2040020410  
WHITE SANDS

STATION ALTITUDE 3989.00 FEET MSL  
11 OCT. 79 0650 HRS MST  
ASCENSION NO. 416

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

TABLE 7

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | AIR TEMPERATURE<br>DEGREES | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION, SPEED<br>DEGREES (T), KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|----------------------------|----------------------|------------------------------|----------------------------|---|---------------------------|
| 3989.0                         | 881.5                 | 7.8                        | 63.0                 | 1089.9                       | 653.9                      | .0  | 1.000275                  |
| 4000.0                         | 881.2                 | 8.0                        | 62.4                 | 1080.7                       | 654.2                      | .0  | 1.000275                  |
| 4500.0                         | 835.4                 | 17.0                       | 33.7                 | 1036.0                       | 664.6                      | 1.9   | 1.000260                  |
| 5000.0                         | 830.2                 | 22.0                       | 15.1                 | 1001.7                       | 669.9                      | 3.7   | 1.000241                  |
| 5500.0                         | 835.3                 | 21.5                       | 14.3                 | 980.0                        | 669.3                      | 5.5   | 1.000236                  |
| 6000.0                         | 820.7                 | 21.0                       | 13.5                 | 970.6                        | 668.8                      | 7.4   | 1.000231                  |
| 6500.0                         | 806.3                 | 20.2                       | 13.1                 | 950.0                        | 667.8                      | 9.8   | 1.000227                  |
| 7000.0                         | 792.0                 | 19.1                       | 13.4                 | 942.8                        | 666.4                      | 12.7  | 1.000223                  |
| 7500.0                         | 777.9                 | 17.9                       | 13.6                 | 929.7                        | 665.1                      | 15.6  | 1.000220                  |
| 8000.0                         | 764.1                 | 16.8                       | 13.9                 | 910.8                        | 663.8                      | 15.6  | 1.000216                  |
| 8500.0                         | 750.5                 | 15.6                       | 14.2                 | 904.2                        | 662.5                      | 15.6  | 1.000213                  |
| 9000.0                         | 737.2                 | 14.5                       | 14.5                 | 891.7                        | 661.1                      | 15.6  | 1.000210                  |
| 9500.0                         | 724.1                 | 13.4                       | 14.7                 | 879.4                        | 659.8                      | 15.5  | 1.000206                  |
| 10000.0                        | 711.2                 | 12.2                       | 14.9                 | 867.3                        | 658.5                      | 15.8  | 1.000203                  |
| 10500.0                        | 698.4                 | 10.9                       | 14.0                 | 853.8                        | 656.9                      | 17.5  | 1.000199                  |
| 11000.0                        | 685.6                 | 9.7                        | 13.7                 | 843.7                        | 655.5                      | 19.2  | 1.000196                  |
| 11500.0                        | 673.1                 | 8.5                        | 13.4                 | 831.8                        | 654.1                      | 19.4  | 1.000192                  |
| 12000.0                        | 660.9                 | 7.4                        | 13.1                 | 820.0                        | 652.8                      | 18.2  | 1.000189                  |
| 12500.0                        | 648.8                 | 6.6                        | 12.7                 | 807.2                        | 651.9                      | 16.9  | 1.000186                  |
| 13000.0                        | 636.8                 | 6.3                        | 12.0                 | 793.4                        | 651.4                      | 14.0  | 1.000182                  |
| 13500.0                        | 625.1                 | 5.9                        | 11.4                 | 779.8                        | 651.0                      | 11.0  | 1.000179                  |
| 14000.0                        | 613.5                 | 5.3                        | 11.0                 | 767.0                        | 650.3                      | 8.7   | 1.000176                  |
| 14500.0                        | 601.9                 | 4.3                        | 11.0                 | 755.5                        | 649.1                      | 6.9   | 1.000173                  |
| 15000.0                        | 590.6                 | 3.2                        | 11.0                 | 744.1                        | 647.8                      | 5.0   | 1.000170                  |
| 15500.0                        | 579.5                 | 2.1                        | 11.0                 | 732.9                        | 646.5                      | 4.4   | 1.000167                  |
| 16000.0                        | 568.6                 | 1.1                        | 11.0                 | 721.9                        | 645.3                      | 4.6   | 1.000164                  |
| 16500.0                        | 557.9                 | .0                         | 11.0                 | 711.1                        | 644.0                      | 5.7   | 1.000162                  |
| 17000.0                        | 547.3                 | -1.0                       | 11.0                 | 700.5                        | 642.8                      | 7.7   | 1.000159                  |
| 17500.0                        | 537.0                 | -2.1                       | 11.0                 | 690.0                        | 641.5                      | 9.7   | 1.000157                  |
| 18000.0                        | 526.9                 | -3.2                       | 11.0                 | 679.7                        | 640.2                      | 10.3  | 1.000154                  |
| 18500.0                        | 517.0                 | -4.2                       | 11.0                 | 669.5                        | 639.0                      | 11.0  | 1.000152                  |
| 19000.0                        | 507.3                 | -5.3                       | 11.0                 | 659.5                        | 637.7                      | 11.9  | 1.000149                  |
| 19500.0                        | 497.6                 | -6.4                       | 11.1                 | 649.7                        | 636.4                      | 12.0  | 1.000147                  |
| 20000.0                        | 488.0                 | -7.6                       | 11.3                 | 640.1                        | 634.9                      | 12.3  | 1.000145                  |
| 20500.0                        | 478.5                 | -8.9                       | 11.6                 | 630.6                        | 633.4                      | 12.4  | 1.000142                  |
| 21000.0                        | 469.2                 | -10.1                      | 11.9                 | 621.3                        | 631.9                      | 12.1  | 1.000140                  |
| 21500.0                        | 460.0                 | -11.3                      | 11.9                 | 611.9                        | 630.5                      | 11.9  | 1.000138                  |
| 22000.0                        | 451.0                 | -12.4                      | 11.6                 | 602.3                        | 629.2                      | 11.4  | 1.000136                  |
| 22500.0                        | 442.1                 | -13.4                      | 11.3                 | 592.8                        | 627.9                      | 10.7  | 1.000133                  |
| 23000.0                        | 433.4                 | -14.5                      | 11.0                 | 583.5                        | 626.6                      | 10.1  | 1.000131                  |

STATION ALTITUDE 3909.00 FEET MSL  
11 OCT. 79 0650 HRS MST  
ASCENSION NO. 416

UPPER AIR DATA  
2840020410  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

TABLE 7 (CONT)

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR<br>DEGREES CELTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION (TUL)<br>SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|--|----------------------|------------------------------|----------------------------|--|---------------------------|
| 23500.0                           | 424.7                 | -15.7                                    | 11.0                 | 574.0                        | 625.1                      | 209.0  | 1.000129                  |
| 24000.0                           | 410.2                 | -17.0                                    | 11.0                 | 565.9                        | 623.5                      | 209.3  | 1.000127                  |
| 24500.0                           | 407.8                 | -18.3                                    | 11.0                 | 557.4                        | 622.0                      | 209.0  | 1.000125                  |
| 25000.0                           | 399.6                 | -19.0                                    | 11.0                 | 548.9                        | 620.4                      | 252.0  | 1.000123                  |
| 25500.0                           | 391.4                 | -20.7                                    | 11.1                 | 540.1                        | 619.0                      | 259.3  | 1.000121                  |
| 26000.0                           | 383.3                 | -21.9                                    | 11.3                 | 531.4                        | 617.0                      | 250.9  | 1.000119                  |
| 26500.0                           | 375.4                 | -23.0                                    | 11.4                 | 522.9                        | 616.2                      | 227.0  | 1.000117                  |
| 27000.0                           | 367.7                 | -24.2                                    | 11.5                 | 514.5                        | 614.7                      | 224.2  | 1.000115                  |
| 27500.0                           | 360.1                 | -25.4                                    | 11.6                 | 506.2                        | 613.3                      | 224.1  | 1.000113                  |
| 28000.0                           | 352.7                 | -26.5                                    | 11.8                 | 498.1                        | 611.8                      | 224.9  | 1.000111                  |
| 28500.0                           | 345.4                 | -27.7                                    | 11.9                 | 490.2                        | 610.4                      | 226.0  | 1.000110                  |
| 29000.0                           | 338.3                 | -28.9                                    | 11.6**               | 482.4                        | 608.9                      | 231.3  | 1.000108                  |
| 29500.0                           | 331.1                 | -30.2                                    | 9.5**                | 474.7                        | 607.2                      | 236.2  | 1.000106                  |
| 30000.0                           | 324.0                 | -31.6                                    | 7.4**                | 467.2                        | 605.5                      | 241.0  | 1.000104                  |
| 30500.0                           | 317.1                 | -32.9                                    | 5.3**                | 459.6                        | 603.8                      | 249.2  | 1.000103                  |
| 31000.0                           | 310.3                 | -34.3                                    | 3.3**                | 452.0                        | 602.1                      | 257.1  | 1.000101                  |
| 31500.0                           | 303.7                 | -35.6                                    | 1.2**                | 445.4                        | 600.4                      | 266.7  | 1.000099                  |
| 32000.0                           | 297.2                 | -36.8                                    |                      | 438.0                        | 598.9                      | 278.5  | 1.000098                  |
| 32500.0                           | 290.7                 | -37.8                                    |                      | 430.2                        | 597.7                      | 290.0  | 1.000096                  |
| 33000.0                           | 284.3                 | -38.7                                    |                      | 422.0                        | 596.5                      | 300.5  | 1.000094                  |
| 33500.0                           | 278.1                 | -39.7                                    |                      | 415.0                        | 595.2                      | 308.3  | 1.000092                  |
| 34000.0                           | 272.0                 | -40.8                                    |                      | 407.9                        | 593.8                      | 313.9  | 1.000091                  |
| 34500.0                           | 265.9                 | -42.1                                    |                      | 400.9                        | 592.2                      | 316.0  | 1.000089                  |
| 35000.0                           | 260.0                 | -43.3                                    |                      | 394.0                        | 590.7                      | 318.2  | 1.000088                  |
| 35500.0                           | 254.2                 | -44.5                                    |                      | 387.3                        | 589.1                      | 319.7  | 1.000086                  |
| 36000.0                           | 248.6                 | -45.7                                    |                      | 380.7                        | 587.5                      | 320.9  | 1.000085                  |
| 36500.0                           | 242.9                 | -47.0                                    |                      | 374.1                        | 585.9                      | 322.0  | 1.000083                  |
| 37000.0                           | 237.4                 | -48.2                                    |                      | 367.6                        | 584.3                      | 323.1  | 1.000082                  |
| 37500.0                           | 232.0                 | -49.4                                    |                      | 361.2                        | 582.7                      | 322.4  | 1.000080                  |
| 38000.0                           | 226.7                 | -50.7                                    |                      | 355.0                        | 581.1                      | 321.0  | 1.000079                  |
| 38500.0                           | 221.4                 | -51.5                                    |                      | 348.0                        | 580.0                      | 319.0  | 1.000078                  |
| 39000.0                           | 216.3                 | -52.1                                    |                      | 341.0                        | 579.2                      | 317.0  | 1.000076                  |
| 39500.0                           | 211.3                 | -52.8                                    |                      | 334.1                        | 578.3                      | 316.1  | 1.000074                  |
| 40000.0                           | 206.4                 | -53.8                                    |                      | 327.7                        | 577.0                      | 314.0  | 1.000073                  |
| 40500.0                           | 201.6                 | -54.8                                    |                      | 321.0                        | 575.6                      | 315.1  | 1.000072                  |
| 41000.0                           | 196.8                 | -56.0                                    |                      | 315.6                        | 574.1                      | 315.4  | 1.000070                  |
| 41500.0                           | 192.1                 | -57.1                                    |                      | 309.7                        | 572.6                      | 315.7  | 1.000069                  |
| 42000.0                           | 187.4                 | -58.3                                    |                      | 303.0                        | 571.1                      | 314.5  | 1.000068                  |
| 42500.0                           | 182.9                 | -59.4                                    |                      | 296.1                        | 569.6                      | 313.2  | 1.000066                  |
| 43000.0                           | 178.5                 | -60.6                                    |                      | 292.0                        | 568.0                      | 311.9  | 1.000065                  |

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA  
2840020410  
WHITE SANDS

STATION ALTITUDE 3989.00 FEET MSL  
11 OCT. 79 0650 HRS MST  
ASCENSION NO. 410

GEODETIC COORDINATES  
32.40043 LAT DEG  
105.37033 LON DEG

TABLE 7 (CONT)

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES<br>DEWPOINT CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION<br>DEGREES(T.I.) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|---|----------------------|------------------------------|----------------------------|---|----------------|---------------------------|
| 43500.0                        | 174.3                 | -61.7   |                      | 287.1                        | 500.5                      | 310.0                                   | 44.0           | 1.000064                  |
| 44000.0                        | 170.1                 | -62.8   |                      | 281.7                        | 505.0                      | 310.7                                   | 42.0           | 1.000063                  |
| 44500.0                        | 166.0                 | -64.0   |                      | 276.4                        | 509.4                      | 310.9                                   | 39.7           | 1.000062                  |
| 45000.0                        | 162.0                 | -64.8   |                      | 270.9                        | 512.3                      | 311.1                                   | 37.4           | 1.000060                  |
| 45500.0                        | 158.0                 | -64.6   |                      | 265.9                        | 516.6                      | 311.3                                   | 35.1           | 1.000059                  |
| 46000.0                        | 154.1                 | -64.3   |                      | 257.1                        | 521.0                      | 312.4                                   | 33.2           | 1.000057                  |
| 46500.0                        | 150.3                 | -65.8   |                      | 252.5                        | 521.0                      | 314.0                                   | 31.5           | 1.000056                  |
| 47000.0                        | 146.6                 | -66.9   |                      | 247.6                        | 521.6                      | 315.7                                   | 29.6           | 1.000055                  |
| 47500.0                        | 143.0                 | -67.9   |                      | 242.7                        | 525.1                      | 317.7                                   | 28.1           | 1.000054                  |
| 48000.0                        | 139.4                 | -69.0   |                      | 237.8                        | 528.7                      | 318.6                                   | 27.5           | 1.000053                  |
| 48500.0                        | 135.9                 | -69.7   |                      | 232.7                        | 535.7                      | 319.2                                   | 27.3           | 1.000052                  |
| 49000.0                        | 132.5                 | -70.1   |                      | 227.3                        | 535.1                      | 319.7                                   | 27.1           | 1.000051                  |
| 49500.0                        | 129.2                 | -70.5   |                      | 222.1                        | 534.6                      | 320.7                                   | 26.3           | 1.000049                  |
| 50000.0                        | 125.9                 | -70.9   |                      | 216.8                        | 534.1                      | 322.4                                   | 24.6           | 1.000048                  |
| 50500.0                        | 122.7                 | -70.5   |                      | 211.0                        | 534.6                      | 324.4                                   | 23.0           | 1.000047                  |
| 51000.0                        | 119.6                 | -70.1   |                      | 205.3                        | 535.1                      | 325.9                                   | 21.3           | 1.000046                  |
| 51500.0                        | 116.6                 | -70.4   |                      | 200.3                        | 534.8                      | 326.3                                   | 19.3           | 1.000045                  |
| 52000.0                        | 113.7                 | -71.0   |                      | 195.8                        | 534.0                      | 326.8                                   | 17.3           | 1.000044                  |
| 52500.0                        | 110.8                 | -71.5   |                      | 191.4                        | 533.2                      | 328.9                                   | 16.1           | 1.000043                  |
| 53000.0                        | 108.0                 | -72.1   |                      | 187.1                        | 532.4                      | 332.9                                   | 16.1           | 1.000042                  |
| 53500.0                        | 105.3                 | -72.1   |                      | 182.4                        | 532.4                      | 336.9                                   | 16.1           | 1.000041                  |
| 54000.0                        | 102.6                 | -72.1   |                      | 177.7                        | 532.4                      | 347.2                                   | 14.8           | 1.000040                  |
| 54500.0                        | 100.0                 | -72.1   |                      | 173.2                        | 532.4                      | 3.0                                     | 13.6           | 1.000039                  |
| 55000.0                        | 97.4                  | -72.6   |                      | 169.2                        | 531.8                      | 21.5                                    | 13.7           | 1.000038                  |
| 55500.0                        | 94.9                  | -73.0   |                      | 165.3                        | 531.2                      | 31.0                                    | 13.8           | 1.000037                  |
| 56000.0                        | 92.5                  | -73.0   |                      | 161.0                        | 531.1                      | 41.3                                    | 14.3           | 1.000036                  |
| 56500.0                        | 90.2                  | -72.9   |                      | 156.8                        | 531.3                      | 46.5                                    | 14.2           | 1.000035                  |
| 57000.0                        | 87.9                  | -72.8   |                      | 152.8                        | 531.5                      | 42.8                                    | 12.0           | 1.000034                  |
| 57500.0                        | 85.8                  | -72.6   |                      | 148.8                        | 531.8                      | 37.5                                    | 9.9            | 1.000033                  |
| 58000.0                        | 83.5                  | -72.1   |                      | 144.8                        | 532.3                      | 29.8                                    | 8.1            | 1.000032                  |
| 58500.0                        | 81.4                  | -71.4   |                      | 140.5                        | 533.4                      | 17.4                                    | 6.5            | 1.000031                  |
| 59000.0                        | 79.3                  | -70.7   |                      | 136.5                        | 534.4                      | 10.5                                    | 6.2            | 1.000030                  |
| 59500.0                        | 77.3                  | -69.9   |                      | 132.8                        | 535.4                      | 4.5                                     | 6.1            | 1.000030                  |
| 60000.0                        | 75.4                  | -69.2   |                      | 128.8                        | 536.4                      | 4.0                                     | 6.0            | 1.000029                  |
| 60500.0                        | 73.5                  | -68.4   |                      | 125.1                        | 537.4                      | 8.4                                     | 5.8            | 1.000028                  |
| 61000.0                        | 71.7                  | -67.7   |                      | 121.5                        | 538.4                      | 7.7                                     | 6.2            | 1.000027                  |
| 61500.0                        | 69.9                  | -66.9   |                      | 118.0                        | 539.4                      | 7.1                                     | 7.1            | 1.000026                  |
| 62000.0                        | 68.1                  | -66.2   |                      | 114.7                        | 540.5                      | 8.9                                     | 7.9            | 1.000026                  |
| 62500.0                        | 66.5                  | -65.4   |                      | 111.5                        | 541.5                      | 12.4                                    | 8.5            | 1.000025                  |
| 63000.0                        | 64.8                  | -64.6   |                      | 108.3                        | 542.6                      | 15.3                                    | 8.9            | 1.000024                  |

UPPER AIR DATA  
2040020410  
WHITE SANDS

STATION ALTITUDE 3989.00 FEET MSL  
11 OCT. 79 0630 HRS MST  
ASCENSION NO. 416

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

TABLE 7 (CONT)

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES<br>CELSIUS | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION<br>DEGREES (TT) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|---------------------------------------|----------------------|------------------------------|----------------------------|--|----------------|---------------------------|
| 0350.0                         | 03.3                  | -63.8                                 |                      | 103.3                        | 503.6                      | 13.7                                   | 7.5            | 1.000023                  |
| 0400.0                         | 01.7                  | -63.1                                 |                      | 102.3                        | 504.0                      | 11.5                                   | 6.0            | 1.000023                  |
| 0450.0                         | 00.2                  | -63.1                                 |                      | 99.8                         | 504.6                      | 13.0                                   | 4.4            | 1.000022                  |
| 0500.0                         | 08.7                  | -63.1                                 |                      | 97.4                         | 504.6                      | 19.0                                   | 2.9            | 1.000022                  |
| 0550.0                         | 07.3                  | -63.1                                 |                      | 95.0                         | 504.6                      | 16.4                                   | 1.2            | 1.000021                  |
| 0600.0                         | 05.9                  | -63.1                                 |                      | 92.7                         | 504.0                      | 240.5                                  | .8             | 1.000021                  |
| 0650.0                         | 04.6                  | -63.1                                 |                      | 90.5                         | 504.6                      | 235.0                                  | 2.3            | 1.000020                  |
| 0700.0                         | 03.2                  | -62.8                                 |                      | 88.2                         | 503.1                      | 257.3                                  | 3.5            | 1.000020                  |
| 0750.0                         | 02.0                  | -61.6                                 |                      | 85.5                         | 500.7                      | 268.4                                  | 4.9            | 1.000019                  |
| 0800.0                         | 00.7                  | -60.4                                 |                      | 83.0                         | 500.3                      | 323.4                                  | 6.0            | 1.000018                  |
| 0850.0                         | 49.5                  | -59.6                                 |                      | 80.7                         | 509.4                      | 347.3                                  | 10.0           | 1.000018                  |
| 0900.0                         | 48.3                  | -59.2                                 |                      | 78.7                         | 509.0                      | 359.7                                  | 11.7           | 1.000018                  |
| 0950.0                         | 47.2                  | -58.9                                 |                      | 76.7                         | 509.3                      | 10.6                                   | 12.7           | 1.000017                  |
| 1000.0                         | 40.0                  | -58.5                                 |                      | 74.7                         | 509.7                      | 20.0                                   | 13.0           | 1.000017                  |
| 1050.0                         | 44.9                  | -58.2                                 |                      | 72.8                         | 571.2                      | 34.0                                   | 11.3           | 1.000016                  |
| 1100.0                         | 43.9                  | -57.9                                 |                      | 71.0                         | 571.0                      | 50.5                                   | 10.4           | 1.000016                  |
| 1150.0                         | 42.8                  | -57.5                                 |                      | 69.2                         | 572.0                      | 54.2                                   | 10.0           | 1.000015                  |
| 1200.0                         | 41.8                  | -57.4                                 |                      | 67.5                         | 572.2                      | 55.0                                   | 9.6            | 1.000015                  |
| 1250.0                         | 40.8                  | -57.3                                 |                      | 65.9                         | 572.3                      | 53.0                                   | 8.4            | 1.000015                  |
| 1300.0                         | 39.9                  | -57.3                                 |                      | 64.3                         | 572.3                      | 53.5                                   | 6.2            | 1.000014                  |
| 1350.0                         | 38.9                  | -57.3                                 |                      | 62.8                         | 572.3                      | 48.5                                   | 3.9            | 1.000014                  |
| 1400.0                         | 38.0                  | -57.3                                 |                      | 61.3                         | 572.4                      | 71.4                                   | 3.2            | 1.000014                  |
| 1450.0                         | 37.1                  | -57.3                                 |                      | 59.9                         | 572.4                      | 100.4                                  | 3.3            | 1.000013                  |
| 1500.0                         | 36.2                  | -57.2                                 |                      | 58.4                         | 572.4                      | 100.5                                  | 3.6            | 1.000013                  |
| 1550.0                         | 35.4                  | -57.2                                 |                      | 57.1                         | 572.5                      | 93.4                                   | 3.6            | 1.000013                  |
| 1600.0                         | 34.5                  | -57.2                                 |                      | 55.7                         | 572.5                      | 62.4                                   | 3.7            | 1.000012                  |
| 1650.0                         | 33.7                  | -56.5                                 |                      | 54.2                         | 573.4                      | 77.6                                   | 1.7            | 1.000012                  |
| 1700.0                         | 32.9                  | -55.8                                 |                      | 52.8                         | 574.3                      | 303.9                                  | .4             | 1.000012                  |
| 1750.0                         | 32.2                  | -55.1                                 |                      | 51.4                         | 575.2                      | 257.5                                  | 3.3            | 1.000011                  |
| 1800.0                         | 31.4                  | -54.4                                 |                      | 50.0                         | 576.1                      | 253.1                                  | 6.7            | 1.000011                  |
| 1850.0                         | 30.0                  | -53.8                                 |                      | 48.7                         | 577.0                      | 250.0                                  | 9.0            | 1.000011                  |
| 1900.0                         | 29.3                  | -53.1                                 |                      | 47.4                         | 578.0                      | 267.0                                  | 9.7            | 1.000011                  |
| 1950.0                         | 28.6                  | -52.4                                 |                      | 46.2                         | 578.8                      | 277.3                                  | 10.7           | 1.000010                  |
| 2000.0                         | 27.9                  | -51.7                                 |                      | 45.0                         | 579.7                      | 270.7                                  | 6.8            | 1.000010                  |
| 2050.0                         | 27.3                  | -51.1                                 |                      | 43.6                         | 580.0                      | 247.0                                  | 3.2            | 1.000010                  |
| 2100.0                         | 26.7                  | -50.4                                 |                      | 42.7                         | 581.4                      |  |                | 1.000010                  |
| 2150.0                         | 26.1                  | -50.1                                 |                      | 41.6                         | 581.8                      |  |                | 1.000009                  |
| 2200.0                         | 25.5                  | -50.1                                 |                      | 40.7                         | 581.0                      |  |                | 1.000009                  |
| 2250.0                         |                       | -50.1                                 |                      | 39.8                         | 581.8                      |  |                | 1.000009                  |

STATION ALTITUDE 3989.00 FEET MSL  
11 OCT. 79 0650 HRS MST  
ASCENSION NO. 416

MANDATORY LEVELS  
2340020410  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

TABLE 8

| PRESSURE GEOPOTENTIAL<br>MILLIBARS | FEET   | TEMPERATURE<br>AIR<br>DEGREES<br>CENTIGRADE | RELATIVE<br>PERCENT | WIND DATA                 |                |
|------------------------------------|--------|---|---------------------|---------------------------|----------------|
|                                    |        |   |                     | DIRECTION<br>DEGREES (TN) | SPEED<br>KNOTS |
| 850.0                              | 5061.  | 22.0  | 13.                 | 350.2                     | 3.7            |
| 800.0                              | 6718.  | 19.7  | 13.                 | 348.7                     | 11.1           |
| 750.0                              | 8524.  | 15.6  | 14.                 | 330.2                     | 15.6           |
| 700.0                              | 10426. | 11.0  | 14.                 | 311.5                     | 17.3           |
| 650.0                              | 12435. | 6.7   | 13.                 | 308.7                     | 17.1           |
| 600.0                              | 14581. | 4.1   | 11.                 | 291.6                     | 0.5            |
| 550.0                              | 16880. | -6.8  | 11.                 | 339.7                     | 7.2            |
| 500.0                              | 19352. | -12.5                                       | 11.                 | 296.5                     | 12.0           |
| 450.0                              | 22023. | -19.5                                       | 12.                 | 273.5                     | 11.3           |
| 400.0                              | 24936. | -26.9                                       | 11.                 | 253.0                     | 7.2            |
| 350.0                              | 28143. | -36.4                                       | 12.                 | 225.2                     | 15.4           |
| 300.0                              | 31721. | -45.4                                       |                     | 275.0                     | 15.7           |
| 250.0                              | 35793. | -55.2                                       |                     | 320.6                     | 33.0           |
| 200.0                              | 40565. | -61.5                                       |                     | 315.2                     | 30.5           |
| 175.0                              | 43322. | -65.9                                       |                     | 310.8                     | 43.9           |
| 150.0                              | 46420. | -70.8                                       |                     | 314.0                     | 31.4           |
| 125.0                              | 49990. | -72.1                                       |                     | 322.9                     | 24.3           |
| 100.0                              | 54325. | -70.9                                       |                     | 2.5                       | 13.6           |
| 80.0                               | 58628. | -67.0                                       |                     | 12.9                      | 6.2            |
| 70.0                               | 61248. | -63.1                                       |                     | 7.7                       | 7.0            |
| 60.0                               | 64337. | -59.7                                       |                     | 13.9                      | 4.3            |
| 50.0                               | 68020. | -57.3                                       |                     | 338.4                     | 7.8            |
| 40.0                               | 72637. | -53.1                                       |                     | 54.1                      | 0.7            |
| 30.0                               | 78633. | -50.1                                       |                     | 200.4                     | 9.5            |
| 25.0                               | 82526. |   |                     |                           |                |

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3951.40 FEET MSL  
11 OCT. 79 0600 HRS MST  
ASCENSION 110. 66

SIGNIFICANT LEVEL DATA  
2840050000  
APACHE

GEODETIC COORDINATES  
32.62700 LAT DEG  
106.39352 LONG DEG

TABLE 9

| PRESSURE<br>MILLIBARS | GEOMETRIC<br>ALTITUDE<br>MSL FEET | TEMPERATURE    |                        | REL. HUM.<br>PERCENT |
|-----------------------|-----------------------------------|----------------|------------------------|----------------------|
|                       |                                   | AIR<br>DEGREES | DEWPOINT<br>CENTIGRADE |                      |
| 881.7                 | 3951.4                            | 8.0            | 2.7                    | 69.0                 |
| 866.4                 | 4370.0                            | 16.6           | 1.9                    | 37.0                 |
| 858.4                 | 4694.8                            | 18.3           | 2.0                    | 35.0                 |
| 850.0                 | 4971.0                            | 17.6           | 1.2                    | 33.0                 |
| 828.0                 | 5708.5                            | 19.4           | -4.0                   | 19.0                 |
| 808.0                 | 6397.5                            | 19.0           | -5.8                   | 18.0                 |
| 700.0                 | 10375.5                           | 10.1           | -13.1                  | 18.0                 |
| 666.4                 | 11709.2                           | 6.4            | -16.2                  | 18.0                 |
| 604.6                 | 14306.2                           | 3.1            | -20.2                  | 16.0                 |
| 579.2                 | 15452.0                           | .5             | -21.7                  | 17.0                 |
| 500.0                 | 19277.6                           | -6.8           | -28.3                  | 16.0                 |
| 453.2                 | 21770.7                           | -13.0          | -32.8                  | 17.0                 |
| 431.4                 | 23001.6                           | -15.2          | -35.3                  | 16.0                 |
| 400.0                 | 24861.5                           | -20.4          | -40.2                  | 15.0                 |
| 344.2                 | 28466.0                           | -27.9          | -45.8                  | 16.0                 |
| 319.6                 | 30204.4                           | -32.7          | -49.3                  | 17.0                 |
| 300.0                 | 31659.4                           | -36.8          |                        |                      |
| 273.4                 | 33757.5                           | -40.9          |                        |                      |
| 250.0                 | 35737.9                           | -46.5          |                        |                      |
| 221.6                 | 38340.1                           | -52.5          |                        |                      |
| 200.0                 | 40504.2                           | -56.5          |                        |                      |
| 172.2                 | 43564.4                           | -63.4          |                        |                      |
| 160.0                 | 45059.1                           | -67.2          |                        |                      |
| 155.0                 | 45590.3                           | -65.5          |                        |                      |
| 150.0                 | 46347.6                           | -67.4          |                        |                      |
| 133.4                 | 48650.5                           | -72.3          |                        |                      |
| 122.8                 | 50248.5                           | -74.4          |                        |                      |
| 116.2                 | 51315.0                           | -72.3          |                        |                      |
| 109.6                 | 52443.3                           | -74.0          |                        |                      |
| 106.4                 | 53011.2                           | -75.0          |                        |                      |
| 100.0                 | 54200.7                           | -72.5          |                        |                      |
| 94.2                  | 55350.5                           | -75.0          |                        |                      |
| 88.2                  | 56617.0                           | -74.4          |                        |                      |
| 85.4                  | 57233.6                           | -76.3          |                        |                      |
| 70.0                  | 61089.6                           | -68.7          |                        |                      |
| 60.0                  | 63974.0                           | -64.0          |                        |                      |
| 53.0                  | 66688.8                           | -63.5          |                        |                      |
| 50.0                  | 67678.2                           | -60.9          |                        |                      |
| 42.8                  | 71094.9                           | -57.9          |                        |                      |
| 32.0                  | 76641.3                           | -57.3          |                        |                      |

GEODETIC COORDINATES  
 32.62700 LAT DEG  
 106.39352 LON DEG

SIGNIFICANT LEVEL DATA  
 28400.0000  
 APACHE

STATION ALTITUDE 3951.40 FEET MSL  
 11 OCT. 79 0600 HRS MST  
 ASCENSION NO. 66

TABLE 9 (CONT)

| PRESSURE GEOMETRIC<br>ALTITUDE<br>MILLIBARS MSL FEET | TEMPERATURE<br>AIR DEWPOINT<br>DEGREES CENTIGRADE | REL. HUM.<br>PERCENT |
|--|---|----------------------|
|  |   |                      |
| 30.0 78512.5   | -55.4   |                      |
| 26.2 81400.6   | -50.7   |                      |

STATION ALTITUDE 3951.40 FEET MSL  
11 OCT 79 0600 HRS MST  
ASCENDING NO. 66

UPPER AIR DATA  
20400J0060  
APACHE  
TABLE 10

GEODETTIC COORDINATES  
32.62700 LAT UEG  
106.39352 LONG UEG

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | AIR<br>TEMPERATURE<br>DEGREES<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION<br>DEGREES (T.O.) | WIND<br>SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|---|----------------------|------------------------------|----------------------------|--|------------------------|---------------------------|
| 3951.4                            | 861.7                 | 8.0   | 69.0                 | 1089.0                       | 654.3                      | 340.0                                    | 4.1                    | 1.000278                  |
| 4000.0                            | 860.1                 | 9.0   | 65.3                 | 1083.2                       | 655.4                      | 340.2                                    | 4.2                    | 1.000277                  |
| 4500.0                            | 864.4                 | 17.3  | 36.2                 | 1033.6                       | 665.0                      | 341.9                                    | 5.2                    | 1.000262                  |
| 5000.0                            | 849.1                 | 17.7  | 32.4                 | 1014.2                       | 665.3                      | 343.1                                    | 6.3                    | 1.000255                  |
| 5500.0                            | 834.2                 | 18.9  | 23.0                 | 992.6                        | 666.5                      | 343.9                                    | 7.4                    | 1.000243                  |
| 6000.0                            | 819.5                 | 19.2  | 18.6                 | 974.5                        | 666.8                      | 344.5                                    | 8.5                    | 1.000235                  |
| 6500.0                            | 805.0                 | 18.8  | 18.0                 | 950.9                        | 666.2                      | 345.1                                    | 10.9                   | 1.000231                  |
| 7000.0                            | 790.6                 | 17.7  | 18.0                 | 945.5                        | 664.9                      | 345.5                                    | 13.7                   | 1.000227                  |
| 7500.0                            | 776.5                 | 16.5  | 18.0                 | 932.3                        | 663.6                      | 346.9                                    | 16.1                   | 1.000223                  |
| 8000.0                            | 762.6                 | 15.4  | 18.0                 | 919.2                        | 662.3                      | 348.3                                    | 18.5                   | 1.000219                  |
| 8500.0                            | 749.0                 | 14.3  | 18.0                 | 906.4                        | 661.0                      | 346.5                                    | 18.4                   | 1.000215                  |
| 9000.0                            | 735.6                 | 13.2  | 18.0                 | 893.7                        | 659.7                      | 343.4                                    | 17.5                   | 1.000212                  |
| 9500.0                            | 722.5                 | 12.1  | 18.0                 | 881.3                        | 658.4                      | 334.4                                    | 16.3                   | 1.000208                  |
| 10000.0                           | 709.5                 | 10.9  | 18.0                 | 869.0                        | 657.0                      | 322.6                                    | 15.7                   | 1.000205                  |
| 10500.0                           | 696.8                 | 9.8   | 18.0                 | 857.0                        | 655.6                      | 313.3                                    | 16.1                   | 1.000201                  |
| 11000.0                           | 684.1                 | 8.4   | 18.0                 | 845.6                        | 654.0                      | 305.0                                    | 17.0                   | 1.000198                  |
| 11500.0                           | 671.6                 | 7.0   | 18.0                 | 834.3                        | 652.4                      | 305.0                                    | 16.2                   | 1.000195                  |
| 12000.0                           | 659.2                 | 6.0   | 17.8                 | 821.8                        | 651.2                      | 307.5                                    | 15.1                   | 1.000191                  |
| 12500.0                           | 647.0                 | 5.4   | 17.4                 | 803.5                        | 650.5                      | 314.5                                    | 12.8                   | 1.000188                  |
| 13000.0                           | 635.0                 | 4.8   | 17.0                 | 793.3                        | 649.7                      | 319.3                                    | 10.8                   | 1.000184                  |
| 13500.0                           | 623.3                 | 4.1   | 16.6                 | 782.4                        | 649.0                      | 308.7                                    | 9.4                    | 1.000181                  |
| 14000.0                           | 611.8                 | 3.5   | 16.2                 | 769.8                        | 648.2                      | 298.3                                    | 8.5                    | 1.000178                  |
| 14500.0                           | 600.4                 | 2.7   | 16.2                 | 757.8                        | 647.2                      | 295.0                                    | 8.4                    | 1.000175                  |
| 15000.0                           | 589.2                 | 1.5   | 16.6                 | 746.7                        | 645.9                      | 281.2                                    | 7.5                    | 1.000172                  |
| 15500.0                           | 576.1                 | .4  | 17.0                 | 735.7                        | 644.6                      | 300.3                                    | 4.6                    | 1.000169                  |
| 16000.0                           | 567.1                 | -0.5  | 16.9                 | 724.3                        | 643.4                      | 341.3                                    | 3.5                    | 1.000166                  |
| 16500.0                           | 556.3                 | -1.5  | 16.7                 | 713.0                        | 642.3                      | 5.3                                      | 4.7                    | 1.000164                  |
| 17000.0                           | 545.7                 | -2.5  | 16.6                 | 701.9                        | 641.2                      | 8.8                                      | 6.1                    | 1.000161                  |
| 17500.0                           | 535.4                 | -3.4  | 16.5                 | 691.0                        | 640.0                      | 349.2                                    | 7.5                    | 1.000158                  |
| 18000.0                           | 525.2                 | -4.4  | 16.3                 | 680.3                        | 638.9                      | 333.4                                    | 9.2                    | 1.000155                  |
| 18500.0                           | 515.2                 | -5.3  | 16.2                 | 669.7                        | 637.7                      | 316.4                                    | 11.1                   | 1.000153                  |
| 19000.0                           | 505.4                 | -6.3  | 16.1                 | 659.4                        | 636.6                      | 305.4                                    | 13.0                   | 1.000150                  |
| 19500.0                           | 495.6                 | -7.4  | 16.1                 | 649.3                        | 635.3                      | 297.2                                    | 14.2                   | 1.000148                  |
| 20000.0                           | 486.0                 | -8.6  | 16.3                 | 639.7                        | 633.8                      | 293.6                                    | 14.9                   | 1.000145                  |
| 20500.0                           | 476.5                 | -9.8  | 16.5                 | 630.2                        | 632.3                      | 293.5                                    | 14.9                   | 1.000143                  |
| 21000.0                           | 467.2                 | -11.1                                       | 16.7                 | 620.8                        | 630.8                      | 292.3                                    | 14.7                   | 1.000141                  |
| 21500.0                           | 458.1                 | -12.3                                       | 16.9                 | 611.6                        | 629.3                      | 290.0                                    | 14.4                   | 1.000138                  |
| 22000.0                           | 449.1                 | -13.4                                       | 16.8                 | 602.1                        | 628.0                      | 286.4                                    | 13.9                   | 1.000136                  |
| 22500.0                           | 440.2                 | -14.3                                       | 16.4                 | 592.2                        | 626.9                      | 282.4                                    | 13.3                   | 1.000134                  |
| 23000.0                           | 431.4                 | -15.2                                       | 16.0                 | 582.5                        | 625.8                      | 279.7                                    | 12.7                   | 1.000131                  |



STATION ALTITUDE 3951.40 FEET MSL  
11 OCT. 79 0600 HRS MSL  
ASCENSION NO. 06

UPPER AIR DATA  
2340050000  
APACHE

GEODETTIC COORDINATES  
32°02'70" LAT DEG  
106°59'52" LON DEG

TABLE 10 (CONT)

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR<br>DEGREES<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM./CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION (T.)<br>SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|---|----------------------|-------------------------------|----------------------------|---|---------------------------|
|                                   |                       |   |                      |                               |                            |   |                           |
| 23500.0                           | 422.8                 | -16.6                                       | 15.7                 | 573.9                         | 624.1                      | 277.9   | 1.000129                  |
| 24000.0                           | 414.2                 | -18.0                                       | 15.5                 | 565.5                         | 622.4                      | 278.7   | 1.000127                  |
| 24500.0                           | 405.7                 | -19.4                                       | 15.2                 | 557.1                         | 620.7                      | 275.5   | 1.000125                  |
| 25000.0                           | 397.7                 | -20.7                                       | 15.0                 | 548.7                         | 619.1                      | 267.0   | 1.000123                  |
| 25500.0                           | 389.5                 | -21.7                                       | 15.2                 | 539.0                         | 617.8                      | 258.7   | 1.000121                  |
| 26000.0                           | 381.5                 | -22.8                                       | 15.3                 | 530.7                         | 616.5                      | 240.9   | 1.000119                  |
| 26500.0                           | 373.6                 | -23.8                                       | 15.5                 | 521.9                         | 615.2                      | 229.9   | 1.000117                  |
| 27000.0                           | 365.9                 | -24.8                                       | 15.6                 | 513.3                         | 613.9                      | 220.0   | 1.000115                  |
| 27500.0                           | 358.4                 | -25.9                                       | 15.7                 | 504.8                         | 612.6                      | 220.0   | 1.000113                  |
| 28000.0                           | 351.0                 | -26.9                                       | 15.9                 | 496.5                         | 611.3                      | 227.1   | 1.000111                  |
| 28500.0                           | 343.7                 | -28.0                                       | 16.0                 | 488.0                         | 610.0                      | 229.0   | 1.000109                  |
| 29000.0                           | 336.5                 | -29.4                                       | 16.3                 | 480.6                         | 608.3                      | 231.4   | 1.000108                  |
| 29500.0                           | 329.4                 | -30.8                                       | 16.6                 | 473.3                         | 606.6                      | 237.3   | 1.000106                  |
| 30000.0                           | 322.4                 | -32.1                                       | 16.9                 | 466.0                         | 604.8                      | 244.0   | 1.000104                  |
| 30500.0                           | 315.5                 | -33.5                                       | 13.5**               | 458.7                         | 603.1                      | 249.0   | 1.000102                  |
| 31000.0                           | 308.7                 | -34.9                                       | 7.7**                | 451.5                         | 601.3                      | 252.0   | 1.000101                  |
| 31500.0                           | 302.1                 | -36.4                                       | 1.9**                | 444.4                         | 599.5                      | 258.2   | 1.000099                  |
| 32000.0                           | 295.5                 | -37.5                                       |                      | 436.8                         | 598.1                      | 261.0   | 1.000097                  |
| 32500.0                           | 289.0                 | -38.4                                       |                      | 429.0                         | 596.8                      | 270.3   | 1.000096                  |
| 33000.0                           | 282.7                 | -39.4                                       |                      | 421.4                         | 595.6                      | 281.7   | 1.000094                  |
| 33500.0                           | 276.5                 | -40.4                                       |                      | 413.9                         | 594.4                      | 290.2   | 1.000092                  |
| 34000.0                           | 270.4                 | -41.6                                       |                      | 406.6                         | 592.8                      | 296.0   | 1.000091                  |
| 34500.0                           | 264.4                 | -43.0                                       |                      | 400.2                         | 591.0                      | 303.7   | 1.000089                  |
| 35000.0                           | 258.5                 | -44.4                                       |                      | 393.7                         | 589.2                      | 310.1   | 1.000088                  |
| 35500.0                           | 252.7                 | -45.8                                       |                      | 387.3                         | 587.4                      | 315.0   | 1.000086                  |
| 36000.0                           | 247.0                 | -47.1                                       |                      | 380.6                         | 585.7                      | 319.1   | 1.000085                  |
| 36500.0                           | 241.3                 | -48.3                                       |                      | 373.8                         | 584.2                      | 321.0   | 1.000083                  |
| 37000.0                           | 235.8                 | -49.4                                       |                      | 367.1                         | 582.7                      | 322.3   | 1.000082                  |
| 37500.0                           | 230.4                 | -50.6                                       |                      | 360.6                         | 581.2                      | 321.4   | 1.000080                  |
| 38000.0                           | 225.1                 | -51.7                                       |                      | 354.2                         | 579.7                      | 319.4   | 1.000079                  |
| 38500.0                           | 219.9                 | -52.8                                       |                      | 347.7                         | 578.3                      | 317.1   | 1.000077                  |
| 39000.0                           | 214.8                 | -53.7                                       |                      | 341.0                         | 577.1                      | 314.6   | 1.000076                  |
| 39500.0                           | 209.7                 | -54.6                                       |                      | 334.4                         | 575.9                      | 312.0   | 1.000074                  |
| 40000.0                           | 204.8                 | -55.6                                       |                      | 328.0                         | 574.7                      | 309.0   | 1.000073                  |
| 40500.0                           | 200.0                 | -56.5                                       |                      | 321.6                         | 573.4                      | 306.0   | 1.000072                  |
| 41000.0                           | 195.2                 | -57.6                                       |                      | 315.6                         | 572.0                      | 303.0   | 1.000070                  |
| 41500.0                           | 190.6                 | -58.7                                       |                      | 309.6                         | 570.5                      | 300.0   | 1.000069                  |
| 42000.0                           | 186.0                 | -59.9                                       |                      | 303.7                         | 569.0                      | 297.0   | 1.000068                  |
| 42500.0                           | 181.5                 | -61.0                                       |                      | 298.0                         | 567.5                      | 294.2   | 1.000066                  |
| 43000.0                           | 177.2                 | -62.1                                       |                      | 292.4                         | 566.0                      | 291.2   | 1.000065                  |

\*\* AT LAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

GEODETIC COORDINATES  
32.62700 LAT DEG  
106.39352 LON DEG

UPPER AIR DATA  
2040030000  
APACHE

STATION ALTITUDE 3951.40 FEET MSL  
11 OCT. 79 0600 HRS MST  
ASUSATION NO. 06

TABLE 10 (CONT)

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPLD OF<br>SOUND<br>M/SEC | WIND DATA<br>DIRECTION,<br>DEGREES(T.) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|----------------------------|----------------------|------------------------------|---------------------------|--|----------------|---------------------------|
| 43500.0                        | 172.9                 | -63.2                      |                      | 280.9                        | 504.5                     | 309.7                                  | 47.3           | 1.000064                  |
| 44000.0                        | 168.7                 | -64.5                      |                      | 281.0                        | 502.8                     | 308.0                                  | 47.4           | 1.000063                  |
| 44500.0                        | 164.5                 | -65.8                      |                      | 276.4                        | 501.0                     | 307.4                                  | 45.5           | 1.000062                  |
| 45000.0                        | 160.5                 | -67.0                      |                      | 271.2                        | 500.3                     | 306.6                                  | 42.2           | 1.000060                  |
| 45500.0                        | 156.5                 | -68.3                      |                      | 262.9                        | 501.0                     | 306.1                                  | 37.2           | 1.000059                  |
| 46000.0                        | 152.6                 | -69.5                      |                      | 257.3                        | 500.0                     | 306.5                                  | 32.8           | 1.000057                  |
| 46500.0                        | 148.8                 | -67.7                      |                      | 252.4                        | 500.4                     | 308.0                                  | 29.6           | 1.000056                  |
| 47000.0                        | 145.1                 | -68.8                      |                      | 247.3                        | 500.9                     | 311.3                                  | 26.9           | 1.000055                  |
| 47500.0                        | 141.4                 | -69.9                      |                      | 242.4                        | 500.5                     | 314.3                                  | 26.5           | 1.000054                  |
| 48000.0                        | 137.9                 | -70.9                      |                      | 237.5                        | 504.0                     | 317.4                                  | 26.1           | 1.000053                  |
| 48500.0                        | 134.4                 | -72.0                      |                      | 232.8                        | 502.6                     | 320.4                                  | 26.7           | 1.000052                  |
| 49000.0                        | 131.0                 | -72.8                      |                      | 227.7                        | 501.5                     | 323.4                                  | 27.4           | 1.000051                  |
| 49500.0                        | 127.7                 | -73.4                      |                      | 222.6                        | 500.6                     | 322.3                                  | 27.0           | 1.000050                  |
| 50000.0                        | 124.4                 | -74.1                      |                      | 217.7                        | 500.7                     | 320.6                                  | 26.5           | 1.000048                  |
| 50500.0                        | 121.2                 | -73.9                      |                      | 211.9                        | 500.9                     | 321.0                                  | 23.4           | 1.000047                  |
| 51000.0                        | 118.1                 | -72.9                      |                      | 205.5                        | 501.3                     | 321.3                                  | 20.1           | 1.000046                  |
| 51500.0                        | 115.1                 | -72.7                      |                      | 200.0                        | 501.6                     | 322.2                                  | 18.1           | 1.000045                  |
| 52000.0                        | 112.1                 | -73.7                      |                      | 195.9                        | 500.2                     | 323.3                                  | 16.2           | 1.000044                  |
| 52500.0                        | 109.3                 | -74.6                      |                      | 191.8                        | 500.9                     | 323.9                                  | 16.0           | 1.000043                  |
| 53000.0                        | 106.5                 | -75.0                      |                      | 187.2                        | 500.4                     | 324.4                                  | 16.0           | 1.000042                  |
| 53500.0                        | 103.7                 | -74.0                      |                      | 181.4                        | 500.8                     | 340.7                                  | 14.1           | 1.000040                  |
| 54000.0                        | 101.1                 | -72.9                      |                      | 175.9                        | 501.2                     | 1.0                                    | 13.7           | 1.000039                  |
| 54500.0                        | 98.5                  | -73.3                      |                      | 171.7                        | 500.8                     | 14.7                                   | 13.9           | 1.000038                  |
| 55000.0                        | 96.0                  | -74.6                      |                      | 168.4                        | 500.9                     | 20.1                                   | 14.5           | 1.000038                  |
| 55500.0                        | 93.5                  | -75.5                      |                      | 164.8                        | 507.8                     | 30.5                                   | 14.7           | 1.000037                  |
| 56000.0                        | 91.1                  | -75.0                      |                      | 160.1                        | 500.4                     | 31.1                                   | 14.4           | 1.000036                  |
| 56500.0                        | 88.7                  | -74.5                      |                      | 155.6                        | 500.1                     | 30.9                                   | 13.5           | 1.000035                  |
| 57000.0                        | 86.5                  | -75.7                      |                      | 152.5                        | 507.4                     | 28.6                                   | 11.6           | 1.000034                  |
| 57500.0                        | 84.2                  | -76.0                      |                      | 148.8                        | 507.1                     | 24.9                                   | 9.8            | 1.000033                  |
| 58000.0                        | 82.1                  | -74.9                      |                      | 144.3                        | 508.5                     | 14.0                                   | 8.7            | 1.000032                  |
| 58500.0                        | 80.0                  | -73.9                      |                      | 139.9                        | 509.9                     | 0                                      | 8.0            | 1.000031                  |
| 59000.0                        | 78.0                  | -72.9                      |                      | 135.0                        | 501.3                     | 354.3                                  | 8.5            | 1.000030                  |
| 59500.0                        | 76.0                  | -71.9                      |                      | 131.5                        | 502.6                     | 350.3                                  | 9.3            | 1.000029                  |
| 60000.0                        | 74.0                  | -70.9                      |                      | 127.5                        | 504.0                     | 351.7                                  | 9.1            | 1.000028                  |
| 60500.0                        | 72.2                  | -69.9                      |                      | 123.7                        | 503.4                     | 357.1                                  | 8.3            | 1.000028                  |
| 61000.0                        | 70.3                  | -68.9                      |                      | 119.9                        | 508.8                     | 5.6                                    | 7.5            | 1.000027                  |
| 61500.0                        | 68.6                  | -68.0                      |                      | 116.5                        | 508.0                     | 19.7                                   | 7.0            | 1.000026                  |
| 62000.0                        | 66.9                  | -67.2                      |                      | 113.1                        | 509.1                     | 33.0                                   | 7.0            | 1.000025                  |
| 62500.0                        | 65.2                  | -66.4                      |                      | 109.9                        | 508.2                     | 30.6                                   | 7.7            | 1.000024                  |
| 63000.0                        | 63.6                  | -65.6                      |                      | 106.8                        | 501.3                     | 28.7                                   | 8.5            | 1.000024                  |

STATION ALTITUDE 3951.40 FEET MSL  
11 OCT. 79 0000 HRS MST  
ASCENSION IS. 06

UPPER AIR DATA  
2040030000  
APACHE

GEODETIC COORDINATES  
32.02700 LAT DEG  
106.39352 LONG DEG

TABLE 10 (CONT)

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>MLR | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION (T)<br>DEGREES (T) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|--|----------------------|----------------------------|----------------------------|---|----------------|---------------------------|
| 6330.0                         | 62.1                  | -64.8                                    |                      | 103.7                      | 562.4                      | 21.7                                      | 7.4            | 1.000023                  |
| 6400.0                         | 60.5                  | -64.0                                    |                      | 100.8                      | 563.4                      | 10.7                                      | 6.2            | 1.000022                  |
| 6450.0                         | 59.0                  | -63.9                                    |                      | 98.3                       | 563.5                      | 2.5                                       | 4.5            | 1.000022                  |
| 6500.0                         | 57.6                  | -63.8                                    |                      | 95.9                       | 563.7                      | 33.0                                      | 2.4            | 1.000021                  |
| 6550.0                         | 56.2                  | -63.7                                    |                      | 93.5                       | 563.8                      | 305.2                                     | .9             | 1.000021                  |
| 6600.0                         | 54.8                  | -63.6                                    |                      | 91.2                       | 563.9                      | 255.4                                     | .9             | 1.000020                  |
| 6650.0                         | 53.5                  | -63.5                                    |                      | 88.9                       | 564.0                      | 225.6                                     | 1.3            | 1.000020                  |
| 6700.0                         | 52.2                  | -62.8                                    |                      | 86.5                       | 565.0                      | 113.7                                     | .4             | 1.000019                  |
| 6750.0                         | 50.9                  | -61.7                                    |                      | 83.9                       | 565.5                      | 60.6                                      | 2.6            | 1.000019                  |
| 6800.0                         | 49.7                  | -60.8                                    |                      | 81.5                       | 567.7                      | 55.0                                      | 4.9            | 1.000018                  |
| 6850.0                         | 48.5                  | -60.3                                    |                      | 79.4                       | 568.3                      | 48.1                                      | 6.3            | 1.000018                  |
| 6900.0                         | 47.4                  | -59.9                                    |                      | 77.4                       | 569.0                      | 43.2                                      | 7.8            | 1.000017                  |
| 6950.0                         | 46.2                  | -59.4                                    |                      | 75.3                       | 569.6                      | 35.2                                      | 9.2            | 1.000017                  |
| 7000.0                         | 45.1                  | -58.9                                    |                      | 73.4                       | 570.2                      | 26.0                                      | 10.8           | 1.000016                  |
| 7050.0                         | 44.0                  | -58.5                                    |                      | 71.5                       | 570.8                      | 20.3                                      | 12.5           | 1.000016                  |
| 7100.0                         | 43.0                  | -58.0                                    |                      | 69.6                       | 571.4                      | 18.0                                      | 13.6           | 1.000015                  |
| 7150.0                         | 42.0                  | -57.9                                    |                      | 67.9                       | 571.6                      | 13.5                                      | 14.7           | 1.000015                  |
| 7200.0                         | 41.0                  | -57.9                                    |                      | 66.3                       | 571.6                      | 9.0                                       | 14.3           | 1.000015                  |
| 7250.0                         | 40.0                  | -57.9                                    |                      | 64.8                       | 571.6                      | 350.1                                     | 11.1           | 1.000014                  |
| 7300.0                         | 39.1                  | -57.9                                    |                      | 63.2                       | 571.6                      | 339.5                                     | 8.5            | 1.000014                  |
| 7350.0                         | 38.1                  | -57.9                                    |                      | 61.7                       | 571.6                      | 333.9                                     | 5.7            | 1.000014                  |
| 7400.0                         | 37.2                  | -57.9                                    |                      | 60.3                       | 571.6                      | 347.3                                     | 2.5            | 1.000013                  |
| 7450.0                         | 36.3                  | -57.9                                    |                      | 58.8                       | 571.6                      | 102.5                                     | 1.5            | 1.000013                  |
| 7500.0                         | 35.5                  | -57.9                                    |                      | 57.4                       | 571.6                      | 144.6                                     | 6.6            | 1.000013                  |
| 7550.0                         | 34.6                  | -57.9                                    |                      | 56.1                       | 571.6                      | 149.5                                     | 12.2           | 1.000012                  |
| 7600.0                         | 33.8                  | -57.9                                    |                      | 54.7                       | 571.6                      | 151.9                                     | 13.8           | 1.000012                  |
| 7650.0                         | 33.0                  | -57.9                                    |                      | 53.4                       | 571.6                      | 159.7                                     | 7.2            | 1.000012                  |
| 7700.0                         | 32.2                  | -57.4                                    |                      | 52.1                       | 572.2                      | 230.1                                     | 2.0            | 1.000012                  |
| 7750.0                         | 31.5                  | -56.8                                    |                      | 50.7                       | 573.1                      | 308.0                                     | 5.1            | 1.000011                  |
| 7800.0                         | 30.7                  | -56.1                                    |                      | 49.3                       | 574.0                      | 321.4                                     | 8.6            | 1.000011                  |
| 7850.0                         | 30.0                  | -55.4                                    |                      | 48.0                       | 574.9                      | 326.7                                     | 12.7           | 1.000011                  |
| 7900.0                         | 29.3                  | -54.6                                    |                      | 46.7                       | 575.9                      | 314.4                                     | 9.1            | 1.000010                  |
| 7950.0                         | 28.6                  | -53.8                                    |                      | 45.5                       | 577.0                      | 275.6                                     | 5.7            | 1.000010                  |
| 8000.0                         | 28.0                  | -53.0                                    |                      | 44.3                       | 578.1                      |   |                | 1.000010                  |
| 8050.0                         | 27.3                  | -52.2                                    |                      | 43.1                       | 579.1                      |   |                | 1.000010                  |
| 8100.0                         | 26.7                  | -51.4                                    |                      | 41.9                       | 580.2                      |   |                | 1.000009                  |

GEODETIC COORDINATES  
32.62700 LAT DEG  
106.39352 LONG DEG

MANDATORY LEVELS  
2040030000  
APACHE

STATION ALTITUDE 3951.40 FEET MSL  
11 OCT. 79 0600 HRS MST  
ASCENSION NO. 06

TABLE 11

| PRESSURE GEOPOTENTIAL |        | TEMPERATURE                  |                        | REL. HUM.<br>PERCENT | WIND DATA                |                |
|-----------------------|--------|------------------------------|------------------------|----------------------|--------------------------|----------------|
| MILLIBARS             | FEET   | AIR<br>DEGREES<br>CENTIGRADE | DEWPOINT<br>CENTIGRADE |                      | DIRECTION<br>DEGREES(IN) | SPEED<br>KNOTS |
| 850.0                 | 4967.  | 17.6                         | 1.2                    | 33.                  | 343.0                    | 6.3            |
| 800.0                 | 6672.  | 18.4                         | -6.3                   | 18.                  | 343.2                    | 11.9           |
| 750.0                 | 8471.  | 14.4                         | -9.0                   | 18.                  | 340.6                    | 18.4           |
| 700.0                 | 10365. | 10.1                         | -13.1                  | 18.                  | 315.5                    | 15.9           |
| 650.0                 | 12360. | 5.6                          | -17.2                  | 17.                  | 312.5                    | 13.4           |
| 600.0                 | 14501. | 2.6                          | -20.5                  | 16.                  | 285.5                    | 8.4            |
| 550.0                 | 16780. | -2.1                         | -24.0                  | 17.                  | 14.4                     | 5.7            |
| 500.0                 | 19251. | -6.8                         | -28.3                  | 16.                  | 300.8                    | 13.6           |
| 450.0                 | 21915. | -13.3                        | -33.2                  | 17.                  | 287.3                    | 14.0           |
| 400.0                 | 24620. | -20.4                        | -40.2                  | 15.                  | 269.0                    | 10.3           |
| 350.0                 | 28021. | -27.1                        | -45.2                  | 16.                  | 227.3                    | 14.0           |
| 300.0                 | 31590. | -36.8                        |                        |                      | 257.7                    | 16.9           |
| 250.0                 | 35060. | -46.5                        |                        |                      | 310.9                    | 20.0           |
| 200.0                 | 40400. | -56.5                        |                        |                      | 308.0                    | 34.9           |
| 175.0                 | 43147. | -62.7                        |                        |                      | 310.5                    | 45.5           |
| 150.0                 | 46223. | -67.4                        |                        |                      | 307.7                    | 30.7           |
| 125.0                 | 49764. | -73.9                        |                        |                      | 321.2                    | 20.6           |
| 100.0                 | 54040. | -72.5                        |                        |                      | 7.1                      | 13.8           |
| 80.0                  | 58292. | -73.9                        |                        |                      | 1.6                      | 8.0            |
| 70.0                  | 60682. | -68.7                        |                        |                      | 7.2                      | 7.4            |
| 60.0                  | 63948. | -64.0                        |                        |                      | 6.7                      | 5.9            |
| 50.0                  | 67620. | -60.9                        |                        |                      | 57.7                     | 4.3            |
| 40.0                  | 72219. | -57.9                        |                        |                      | 358.9                    | 11.2           |
| 30.0                  | 78180. | -55.4                        |                        |                      | 320.5                    | 12.5           |

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4010.40 FEET MSL  
11 OCT. 79 0650 HRS MST  
ASCENSION NO. 8

SIGNIFICANT LEVEL DATA  
2840220008  
NW 30

GEODETTIC COORDINATES  
32.88497 LAT DEG  
106.49714 LON DEG

TABLE 12

| PRESSURE GEOMETRIC<br>ALTITUDE<br>MILLIBARS MSL FEET | TEMPERATURE               |                                | REL. HUM.<br>PERCENT |
|--|---------------------------|--------------------------------|----------------------|
|  | AIR<br>DEGREES CENTIGRADE | DEWPOINT<br>DEGREES CENTIGRADE |                      |
| 880.6  | 11.4                      | .8                             | 48.0                 |
| 871.6  | 15.6                      | 1.3                            | 38.0                 |
| 856.0  | 18.1                      | .7                             | 31.0                 |
| 850.0  | 18.1                      | .3                             | 30.0                 |
| 840.2  | 18.6                      | -.7                            | 27.0                 |
| 825.6  | 21.3                      | -4.7                           | 17.0                 |
| 749.2  | 16.0                      | -6.3                           | 18.0                 |
| 700.0  | 11.5                      | -12.0                          | 18.0                 |
| 664.2  | 7.9                       | -15.6                          | 17.0                 |
| 622.6  | 4.5                       | -19.1                          | 16.0                 |
| 616.3  | 5.0                       | -18.7                          | 16.0                 |
| 500.0  | -6.0                      | -26.4                          | 15.0                 |
| 447.4  | -13.5                     | -34.5                          | 15.0                 |
| 439.8  | -14.0                     | -34.9                          | 15.0                 |
| 400.0  | -20.0                     | -39.9                          | 15.0                 |
| 389.0  | -20.8                     | -40.5                          | 15.0                 |
| 323.8  | -31.5                     | -46.8                          | 16.0                 |
| 300.0  | -35.9                     |                                |                      |
| 250.0  | -45.4                     |                                |                      |
| 226.6  | -50.6                     |                                |                      |
| 200.0  | -55.4                     |                                |                      |
| 161.4  | -65.4                     |                                |                      |
| 159.7  | -63.8                     |                                |                      |
| 153.0  | -64.0                     |                                |                      |
| 150.0  | -65.1                     |                                |                      |
| 141.2  | -68.0                     |                                |                      |
| 125.8  | -71.7                     |                                |                      |
| 100.0  | -71.7                     |                                |                      |
| 82.4   | -71.7                     |                                |                      |
| 70.0   | -67.4                     |                                |                      |
| 62.4   | -66.2                     |                                |                      |
| 56.8   | -63.2                     |                                |                      |
| 51.6   | -63.5                     |                                |                      |
| 50.0   | -60.6                     |                                |                      |
| 30.0   | -55.8                     |                                |                      |
| 25.8   | -51.2                     |                                |                      |
| 20.0   | -48.0                     |                                |                      |
| 13.0   | -47.5                     |                                |                      |
| 10.2   | -44.7                     |                                |                      |

STATION ALTITUDE 4010.40 FEET MSL  
11 OCT. 79 0650 HRS MST  
ASCENSION I.O. 8

UPPER AIR DATA  
2640220008  
NW 30

GEODETIC COORDINATES  
32.88497 LAT DEG  
106.49714 LON DEG

TABLE 13

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION,<br>DEGREES (TN) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|----------------------------|----------------------|------------------------------|----------------------------|---|----------------|---------------------------|
| 4010.4                         | 840.6                 | 11.4                       | 48.0                 | 1075.1                       | 658.1                      | .0                                      | .0             | 1.000270                  |
| 4500.0                         | 805.2                 | 16.6                       | 35.2                 | 1037.2                       | 664.1                      | 359.2                                   | 2.1            | 1.000261                  |
| 5000.0                         | 849.9                 | 18.1                       | 30.0                 | 1013.8                       | 665.8                      | 359.2                                   | 4.3            | 1.000254                  |
| 5500.0                         | 835.0                 | 19.6                       | 23.4                 | 991.3                        | 667.3                      | 359.2                                   | 6.5            | 1.000244                  |
| 6000.0                         | 820.3                 | 20.9                       | 17.1                 | 969.8                        | 668.8                      | 357.2                                   | 8.7            | 1.000235                  |
| 6500.0                         | 805.8                 | 20.0                       | 17.2                 | 955.9                        | 667.6                      | 353.5                                   | 10.9           | 1.000231                  |
| 7000.0                         | 791.6                 | 19.0                       | 17.4                 | 942.2                        | 666.5                      | 350.4                                   | 12.8           | 1.000227                  |
| 7500.0                         | 777.7                 | 18.0                       | 17.6                 | 928.6                        | 665.4                      | 347.5                                   | 14.5           | 1.000223                  |
| 8000.0                         | 764.0                 | 17.1                       | 17.8                 | 915.5                        | 664.2                      | 343.8                                   | 14.3           | 1.000220                  |
| 8500.0                         | 750.5                 | 16.1                       | 18.0                 | 902.4                        | 663.1                      | 338.7                                   | 13.0           | 1.000216                  |
| 9000.0                         | 737.1                 | 14.9                       | 18.0                 | 890.0                        | 661.7                      | 331.1                                   | 11.7           | 1.000212                  |
| 9500.0                         | 723.9                 | 13.7                       | 18.0                 | 877.8                        | 660.3                      | 321.3                                   | 10.7           | 1.000209                  |
| 10000.0                        | 710.9                 | 12.5                       | 18.0                 | 865.7                        | 658.9                      | 308.4                                   | 12.5           | 1.000205                  |
| 10500.0                        | 698.1                 | 11.3                       | 17.9                 | 853.9                        | 657.5                      | 298.1                                   | 14.6           | 1.000201                  |
| 11000.0                        | 685.5                 | 10.1                       | 17.6                 | 842.1                        | 656.0                      | 297.9                                   | 15.8           | 1.000198                  |
| 11500.0                        | 673.0                 | 8.8                        | 17.3                 | 830.6                        | 654.5                      | 298.7                                   | 16.5           | 1.000194                  |
| 12000.0                        | 660.7                 | 7.6                        | 16.9                 | 818.9                        | 653.1                      | 302.0                                   | 16.1           | 1.000191                  |
| 12500.0                        | 648.6                 | 6.6                        | 16.6                 | 806.7                        | 652.0                      | 303.2                                   | 15.4           | 1.000188                  |
| 13000.0                        | 636.6                 | 5.7                        | 16.3                 | 794.7                        | 650.8                      | 299.4                                   | 14.1           | 1.000184                  |
| 13500.0                        | 624.9                 | 4.7                        | 16.1                 | 782.9                        | 649.6                      | 296.7                                   | 12.5           | 1.000181                  |
| 14000.0                        | 613.3                 | 4.7                        | 16.0                 | 760.2                        | 649.7                      | 295.1                                   | 10.7           | 1.000178                  |
| 14500.0                        | 601.7                 | 3.7                        | 15.9                 | 750.5                        | 648.5                      | 294.8                                   | 8.7            | 1.000175                  |
| 15000.0                        | 590.4                 | 2.7                        | 15.8                 | 744.9                        | 647.3                      | 293.5                                   | 6.4            | 1.000172                  |
| 15500.0                        | 579.3                 | 1.7                        | 15.7                 | 733.6                        | 646.1                      | 301.2                                   | 3.4            | 1.000169                  |
| 16000.0                        | 568.3                 | .7                         | 15.6                 | 722.4                        | 645.0                      | 358.7                                   | .8             | 1.000166                  |
| 16500.0                        | 557.6                 | -.3                        | 15.5                 | 711.4                        | 643.8                      | 6.1                                     | 1.8            | 1.000163                  |
| 17000.0                        | 547.1                 | -1.3                       | 15.4                 | 700.6                        | 642.6                      | 1.6                                     | 3.0            | 1.000160                  |
| 17500.0                        | 536.8                 | -2.3                       | 15.3                 | 690.0                        | 641.4                      | 336.4                                   | 5.4            | 1.000158                  |
| 18000.0                        | 526.7                 | -3.3                       | 15.2                 | 679.5                        | 640.2                      | 325.3                                   | 8.0            | 1.000155                  |
| 18500.0                        | 516.8                 | -4.3                       | 15.2                 | 669.2                        | 639.0                      | 313.3                                   | 10.2           | 1.000153                  |
| 19000.0                        | 507.0                 | -5.3                       | 15.1                 | 659.0                        | 637.8                      | 304.3                                   | 12.1           | 1.000150                  |
| 19500.0                        | 497.4                 | -6.4                       | 15.0                 | 649.2                        | 636.5                      | 294.6                                   | 13.3           | 1.000148                  |
| 20000.0                        | 487.7                 | -7.7                       | 15.0                 | 639.7                        | 634.9                      | 288.3                                   | 14.1           | 1.000145                  |
| 20500.0                        | 478.2                 | -9.0                       | 15.0                 | 630.4                        | 633.3                      | 284.2                                   | 14.2           | 1.000143                  |
| 21000.0                        | 468.8                 | -10.3                      | 15.0                 | 621.2                        | 631.7                      | 282.6                                   | 14.1           | 1.000141                  |
| 21500.0                        | 459.7                 | -11.7                      | 15.0                 | 612.2                        | 630.1                      | 282.2                                   | 13.9           | 1.000138                  |
| 22000.0                        | 450.7                 | -13.0                      | 15.0                 | 603.4                        | 628.4                      | 281.9                                   | 13.6           | 1.000136                  |
| 22500.0                        | 441.8                 | -13.9                      | 15.0                 | 593.5                        | 627.4                      | 281.4                                   | 13.2           | 1.000134                  |
| 23000.0                        | 433.0                 | -15.0                      | 15.0                 | 584.2                        | 626.0                      | 279.0                                   | 13.0           | 1.000132                  |
| 23500.0                        | 424.3                 | -16.3                      | 15.0                 | 575.3                        | 624.5                      | 276.4                                   | 12.5           | 1.000130                  |

STATION ALTITUDE 4010.40 FEET MSL  
11 OCT. 79 0650 HRS MST  
ASCENSION NO. 8

UPPER AIR DATA  
2840220000  
NW 30

GEODETIC COORDINATES  
32.86497 LAT DEG  
106.49714 LON DEG

TABLE 13 (CONT)

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES | TEMPERATURE<br>DEWPOINT DEGREES | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION,<br>DEGREES (TN) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|----------------------------|---------------------------------|----------------------|---------------------------|----------------------------|---|----------------|---------------------------|
| 24000.0                        | 415.8                 | -17.5                      | -37.8                           | 15.0                 | 560.6                     | 622.9                      | 273.6                                   | 11.0           | 1.000128                  |
| 24500.0                        | 407.5                 | -18.8                      | -38.9                           | 15.0                 | 558.1                     | 621.3                      | 271.0                                   | 9.9            | 1.000126                  |
| 25000.0                        | 399.3                 | -20.1                      | -39.9                           | 15.0                 | 549.5                     | 619.8                      | 269.6                                   | 9.1            | 1.000124                  |
| 25500.0                        | 391.2                 | -20.7                      | -40.4                           | 15.0                 | 539.7                     | 619.1                      | 262.6                                   | 8.8            | 1.000121                  |
| 26000.0                        | 383.1                 | -21.8                      | -41.3                           | 15.1                 | 530.9                     | 617.7                      | 250.9                                   | 9.3            | 1.000119                  |
| 26500.0                        | 375.1                 | -23.0                      | -42.2                           | 15.2                 | 522.4                     | 616.2                      | 239.4                                   | 10.7           | 1.000117                  |
| 27000.0                        | 367.3                 | -24.2                      | -43.2                           | 15.3                 | 514.0                     | 614.7                      | 230.4                                   | 12.7           | 1.000115                  |
| 27500.0                        | 359.7                 | -25.4                      | -44.1                           | 15.4                 | 505.8                     | 613.2                      | 229.4                                   | 15.0           | 1.000113                  |
| 28000.0                        | 352.2                 | -26.6                      | -45.0                           | 15.5                 | 497.7                     | 611.7                      | 230.6                                   | 17.4           | 1.000112                  |
| 28500.0                        | 344.9                 | -27.9                      | -46.0                           | 15.7                 | 489.8                     | 610.2                      | 232.8                                   | 19.0           | 1.000110                  |
| 29000.0                        | 337.8                 | -29.1                      | -46.9                           | 15.8                 | 482.0                     | 608.7                      | 234.8                                   | 20.2           | 1.000108                  |
| 29500.0                        | 330.7                 | -30.3                      | -47.9                           | 15.9                 | 474.3                     | 607.2                      | 237.9                                   | 20.0           | 1.000106                  |
| 30000.0                        | 323.9                 | -31.5                      | -48.8                           | 16.0                 | 466.8                     | 605.6                      | 241.9                                   | 19.2           | 1.000104                  |
| 30500.0                        | 318.9                 | -32.7                      | -52.7                           | 11.5**               | 459.2                     | 604.1                      | 245.9                                   | 17.9           | 1.000103                  |
| 31000.0                        | 310.1                 | -34.0                      | -57.7                           | 7.0**                | 451.7                     | 602.5                      | 250.4                                   | 16.5           | 1.000101                  |
| 31500.0                        | 303.5                 | -35.2                      | -66.5                           | 2.4**                | 444.4                     | 600.9                      | 260.2                                   | 16.0           | 1.000099                  |
| 32000.0                        | 296.9                 | -36.4                      |                                 |                      | 437.0                     | 599.4                      | 271.4                                   | 16.2           | 1.000097                  |
| 32500.0                        | 290.4                 | -37.6                      |                                 |                      | 429.4                     | 597.9                      | 280.3                                   | 18.1           | 1.000096                  |
| 33000.0                        | 284.0                 | -38.8                      |                                 |                      | 422.0                     | 596.4                      | 301.3                                   | 21.2           | 1.000094                  |
| 33500.0                        | 277.7                 | -39.9                      |                                 |                      | 414.3                     | 595.0                      | 309.9                                   | 24.0           | 1.000092                  |
| 34000.0                        | 271.6                 | -41.1                      |                                 |                      | 407.7                     | 593.5                      | 316.1                                   | 27.0           | 1.000091                  |
| 34500.0                        | 265.6                 | -42.2                      |                                 |                      | 400.7                     | 592.0                      | 318.5                                   | 28.5           | 1.000089                  |
| 35000.0                        | 259.7                 | -43.4                      |                                 |                      | 393.8                     | 590.5                      | 320.7                                   | 30.0           | 1.000088                  |
| 35500.0                        | 254.0                 | -44.6                      |                                 |                      | 387.1                     | 589.0                      | 322.7                                   | 29.6           | 1.000086                  |
| 36000.0                        | 248.3                 | -45.8                      |                                 |                      | 380.5                     | 587.5                      | 324.7                                   | 29.2           | 1.000085                  |
| 36500.0                        | 242.7                 | -47.0                      |                                 |                      | 373.8                     | 585.9                      | 324.6                                   | 28.9           | 1.000083                  |
| 37000.0                        | 237.2                 | -48.2                      |                                 |                      | 367.3                     | 584.3                      | 324.2                                   | 28.7           | 1.000082                  |
| 37500.0                        | 231.8                 | -49.4                      |                                 |                      | 360.9                     | 582.7                      | 321.1                                   | 28.8           | 1.000080                  |
| 38000.0                        | 226.5                 | -50.6                      |                                 |                      | 354.6                     | 581.2                      | 319.0                                   | 28.5           | 1.000079                  |
| 38500.0                        | 221.2                 | -51.5                      |                                 |                      | 347.7                     | 580.0                      | 314.5                                   | 27.7           | 1.000077                  |
| 39000.0                        | 216.1                 | -52.4                      |                                 |                      | 341.0                     | 578.8                      | 311.9                                   | 27.8           | 1.000076                  |
| 39500.0                        | 211.1                 | -53.3                      |                                 |                      | 334.5                     | 577.6                      | 310.6                                   | 28.8           | 1.000074                  |
| 40000.0                        | 206.2                 | -54.2                      |                                 |                      | 328.1                     | 576.4                      | 310.6                                   | 31.2           | 1.000073                  |
| 40500.0                        | 201.4                 | -55.1                      |                                 |                      | 321.8                     | 575.2                      | 311.6                                   | 35.0           | 1.000072                  |
| 41000.0                        | 196.6                 | -56.2                      |                                 |                      | 315.6                     | 573.8                      | 311.9                                   | 39.3           | 1.000070                  |
| 41500.0                        | 191.8                 | -57.3                      |                                 |                      | 309.7                     | 572.3                      | 311.7                                   | 44.1           | 1.000069                  |
| 42000.0                        | 187.2                 | -58.5                      |                                 |                      | 303.8                     | 570.8                      | 311.5                                   | 48.4           | 1.000068                  |
| 42500.0                        | 182.7                 | -59.6                      |                                 |                      | 298.1                     | 569.3                      | 311.3                                   | 52.1           | 1.000066                  |
| 43000.0                        | 178.3                 | -60.9                      |                                 |                      | 292.5                     | 567.8                      | 310.7                                   | 53.6           | 1.000065                  |
| 43500.0                        | 174.0                 | -61.9                      |                                 |                      | 287.0                     | 566.3                      | 309.7                                   | 52.9           | 1.000064                  |

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

GEODETIC COORDINATES  
32.88497 LAT DEG  
106.49714 LON DEG

UPPER AIR DATA  
2340220000  
NW 30

TABLE 13 (CONT)

STATION ALTITUDE 4010.40 FEET MSL  
11 OCT. 79 0650 HRS MSI  
ASCENSION NO. 8

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KILOTS | WIND DATA<br>DIRECTION,<br>DEGREES (T) | SPEED<br>KILOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|--|----------------------|------------------------------|-----------------------------|--|-----------------|---------------------------|
| 4400.0                         | 109.8                 | -63.0                                    |                      | 281.6                        | 504.7                       | 307.8                                  | 50.7            | 1.000063                  |
| 4450.0                         | 105.8                 | -64.2                                    |                      | 276.3                        | 503.2                       | 304.3                                  | 46.6            | 1.000062                  |
| 4500.0                         | 101.8                 | -65.3                                    |                      | 271.1                        | 501.7                       | 301.8                                  | 42.5            | 1.000060                  |
| 4550.0                         | 107.8                 | -63.9                                    |                      | 262.7                        | 503.6                       | 302.8                                  | 37.9            | 1.000059                  |
| 4600.0                         | 104.0                 | -64.0                                    |                      | 258.4                        | 503.4                       | 304.7                                  | 33.5            | 1.000057                  |
| 4650.0                         | 100.2                 | -65.0                                    |                      | 251.4                        | 502.0                       | 309.2                                  | 29.8            | 1.000056                  |
| 4700.0                         | 146.5                 | -66.2                                    |                      | 246.6                        | 500.4                       | 314.1                                  | 26.6            | 1.000055                  |
| 4750.0                         | 142.9                 | -67.4                                    |                      | 241.9                        | 500.8                       | 311.0                                  | 25.7            | 1.000054                  |
| 4800.0                         | 139.3                 | -68.4                                    |                      | 237.0                        | 507.4                       | 307.9                                  | 25.0            | 1.000053                  |
| 4850.0                         | 135.8                 | -69.3                                    |                      | 232.0                        | 500.3                       | 310.3                                  | 25.3            | 1.000052                  |
| 4900.0                         | 132.4                 | -70.1                                    |                      | 227.1                        | 505.2                       | 313.1                                  | 25.6            | 1.000051                  |
| 4950.0                         | 129.0                 | -70.9                                    |                      | 222.3                        | 504.1                       | 319.2                                  | 24.3            | 1.000050                  |
| 5000.0                         | 125.8                 | -71.7                                    |                      | 217.5                        | 502.9                       | 326.0                                  | 23.3            | 1.000048                  |
| 5050.0                         | 122.6                 | -71.7                                    |                      | 212.0                        | 502.9                       | 325.1                                  | 22.9            | 1.000047                  |
| 5100.0                         | 119.5                 | -71.7                                    |                      | 208.7                        | 502.9                       | 324.0                                  | 22.6            | 1.000046                  |
| 5150.0                         | 116.5                 | -71.7                                    |                      | 201.4                        | 502.9                       | 322.2                                  | 21.6            | 1.000045                  |
| 5200.0                         | 113.5                 | -71.7                                    |                      | 196.3                        | 502.9                       | 320.3                                  | 20.5            | 1.000044                  |
| 5250.0                         | 110.6                 | -71.7                                    |                      | 191.3                        | 502.9                       | 321.2                                  | 18.2            | 1.000043                  |
| 5300.0                         | 107.8                 | -71.7                                    |                      | 186.5                        | 502.9                       | 322.7                                  | 15.8            | 1.000042                  |
| 5350.0                         | 105.1                 | -71.7                                    |                      | 181.7                        | 502.9                       | 331.2                                  | 14.8            | 1.000040                  |
| 5400.0                         | 102.4                 | -71.7                                    |                      | 177.1                        | 502.9                       | 341.0                                  | 14.4            | 1.000039                  |
| 5450.0                         | 99.8                  | -71.7                                    |                      | 172.8                        | 502.9                       | 359.9                                  | 14.0            | 1.000038                  |
| 5500.0                         | 97.3                  | -71.7                                    |                      | 168.3                        | 502.9                       | 19.3                                   | 15.0            | 1.000037                  |
| 5550.0                         | 94.8                  | -71.7                                    |                      | 164.0                        | 502.9                       | 26.7                                   | 14.6            | 1.000037                  |
| 5600.0                         | 92.4                  | -71.7                                    |                      | 159.8                        | 502.9                       | 29.6                                   | 13.1            | 1.000036                  |
| 5650.0                         | 90.1                  | -71.7                                    |                      | 155.8                        | 502.9                       | 31.0                                   | 11.3            | 1.000035                  |
| 5700.0                         | 87.8                  | -71.7                                    |                      | 151.8                        | 502.9                       | 29.4                                   | 9.5             | 1.000034                  |
| 5750.0                         | 85.6                  | -71.7                                    |                      | 148.0                        | 502.9                       | 28.6                                   | 8.1             | 1.000033                  |
| 5800.0                         | 83.4                  | -71.7                                    |                      | 144.2                        | 502.9                       | 30.7                                   | 7.7             | 1.000032                  |
| 5850.0                         | 81.3                  | -71.3                                    |                      | 140.4                        | 503.4                       | 27.4                                   | 7.4             | 1.000031                  |
| 5900.0                         | 79.3                  | -70.7                                    |                      | 136.4                        | 504.3                       | 6.1                                    | 8.2             | 1.000030                  |
| 5950.0                         | 77.3                  | -70.0                                    |                      | 132.5                        | 505.3                       | 351.1                                  | 9.8             | 1.000030                  |
| 6000.0                         | 75.3                  | -69.3                                    |                      | 128.8                        | 506.2                       | 350.1                                  | 10.6            | 1.000029                  |
| 6050.0                         | 73.5                  | -68.7                                    |                      | 125.1                        | 507.1                       | 349.3                                  | 11.4            | 1.000028                  |
| 6100.0                         | 71.6                  | -68.0                                    |                      | 121.6                        | 508.0                       | 353.1                                  | 10.7            | 1.000027                  |
| 6150.0                         | 69.8                  | -67.4                                    |                      | 118.2                        | 509.6                       | 357.8                                  | 9.9             | 1.000026                  |
| 6200.0                         | 68.4                  | -67.1                                    |                      | 115.1                        | 509.2                       | 2.3                                    | 9.4             | 1.000025                  |
| 6250.0                         | 66.4                  | -66.8                                    |                      | 112.1                        | 509.6                       | 6.9                                    | 9.0             | 1.000025                  |
| 6300.0                         | 64.8                  | -66.6                                    |                      | 109.2                        | 509.9                       | 12.7                                   | 8.9             | 1.000024                  |
| 6350.0                         | 63.2                  | -66.3                                    |                      | 106.4                        | 510.3                       | 19.2                                   | 9.3             | 1.000024                  |



STATION ALTITUDE 4010.40 FEET MSL  
11 OCT. 79 0050 HRS MST  
ASCENSION NO. 8

UPPER AIR DATA  
2040220000  
NW 30

GEODETIC COORDINATES  
32.60497 LAT UEG  
106.49714 LONG UEG

TABLE 13 (CONT)

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR<br>DEGREES CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CM <sup>3</sup> | SPEED OF<br>SOUND<br>METERS<br>PER SECOND | WIND DATA<br>DIRECTION<br>DEGREES (TN) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|--|----------------------|-------------------------------|---|--|----------------|---------------------------|
| 04000.0                        | 61.6                  | -65.8                                    |                      | 103.5                         | 561.0                                     | 24.1                                   | 9.4            | 1.000023                  |
| 04500.0                        | 60.1                  | -65.0                                    |                      | 100.6                         | 562.1                                     | 24.7                                   | 7.8            | 1.000022                  |
| 05000.0                        | 58.6                  | -64.2                                    |                      | 97.7                          | 563.1                                     | 25.5                                   | 6.3            | 1.000022                  |
| 05500.0                        | 57.2                  | -63.4                                    |                      | 95.0                          | 564.2                                     | 33.6                                   | 3.3            | 1.000021                  |
| 06000.0                        | 55.8                  | -63.3                                    |                      | 92.6                          | 564.4                                     | 117.5                                  | 1.0            | 1.000021                  |
| 06500.0                        | 54.4                  | -63.3                                    |                      | 90.4                          | 564.3                                     | 170.0                                  | 2.1            | 1.000020                  |
| 07000.0                        | 53.1                  | -63.4                                    |                      | 88.2                          | 564.2                                     | 177.4                                  | 2.9            | 1.000020                  |
| 07500.0                        | 51.8                  | -63.5                                    |                      | 85.1                          | 564.1                                     | 200.2                                  | 2.4            | 1.000019                  |
| 08000.0                        | 50.6                  | -61.6                                    |                      | 83.3                          | 566.6                                     | 274.1                                  | 3.3            | 1.000019                  |
| 08500.0                        | 49.4                  | -60.5                                    |                      | 80.9                          | 568.1                                     | 303.0                                  | 5.5            | 1.000018                  |
| 09000.0                        | 46.2                  | -60.3                                    |                      | 78.6                          | 568.4                                     | 332.3                                  | 7.9            | 1.000018                  |
| 09500.0                        | 47.0                  | -60.0                                    |                      | 75.9                          | 568.7                                     | 340.2                                  | 10.9           | 1.000017                  |
| 10000.0                        | 45.9                  | -59.8                                    |                      | 73.0                          | 569.0                                     | 34                                     | 11.9           | 1.000017                  |
| 10500.0                        | 44.8                  | -59.6                                    |                      | 73.1                          | 569.3                                     | 17.0                                   | 13.8           | 1.000016                  |
| 11000.0                        | 43.8                  | -59.3                                    |                      | 71.3                          | 569.6                                     | 20.9                                   | 12.3           | 1.000016                  |
| 11500.0                        | 42.7                  | -59.1                                    |                      | 69.6                          | 569.9                                     | 39.6                                   | 10.8           | 1.000015                  |
| 12000.0                        | 41.7                  | -58.9                                    |                      | 67.8                          | 570.2                                     | 49.2                                   | 10.5           | 1.000015                  |
| 12500.0                        | 40.7                  | -58.7                                    |                      | 65.2                          | 570.5                                     | 51.7                                   | 10.9           | 1.000015                  |
| 13000.0                        | 39.8                  | -58.4                                    |                      | 64.5                          | 570.8                                     | 54.1                                   | 11.3           | 1.000014                  |
| 13500.0                        | 38.8                  | -58.2                                    |                      | 62.9                          | 571.1                                     | 53.6                                   | 10.6           | 1.000014                  |
| 14000.0                        | 37.9                  | -58.0                                    |                      | 61.4                          | 571.4                                     | 52.6                                   | 9.5            | 1.000014                  |
| 14500.0                        | 37.0                  | -57.8                                    |                      | 59.8                          | 571.7                                     | 52.0                                   | 8.5            | 1.000013                  |
| 15000.0                        | 36.1                  | -57.5                                    |                      | 58.4                          | 572.0                                     | 59.9                                   | 7.2            | 1.000013                  |
| 15500.0                        | 35.3                  | -57.3                                    |                      | 56.9                          | 572.3                                     | 71.1                                   | 6.1            | 1.000013                  |
| 16000.0                        | 34.4                  | -57.1                                    |                      | 55.5                          | 572.6                                     | 77.5                                   | 5.2            | 1.000012                  |
| 16500.0                        | 33.6                  | -56.9                                    |                      | 54.1                          | 572.9                                     | 72.6                                   | 4.5            | 1.000012                  |
| 17000.0                        | 32.8                  | -56.6                                    |                      | 52.8                          | 573.2                                     | 80.3                                   | 3.8            | 1.000012                  |
| 17500.0                        | 32.0                  | -56.4                                    |                      | 51.5                          | 573.5                                     | 48.8                                   | 1.4            | 1.000011                  |
| 18000.0                        | 31.3                  | -56.2                                    |                      | 50.2                          | 573.8                                     | 272.7                                  | 1.8            | 1.000011                  |
| 18500.0                        | 30.5                  | -56.0                                    |                      | 49.0                          | 574.1                                     | 261.6                                  | 4.6            | 1.000011                  |
| 19000.0                        | 29.8                  | -55.6                                    |                      | 47.7                          | 574.6                                     | 262.6                                  | 5.8            | 1.000011                  |
| 19500.0                        | 29.1                  | -54.9                                    |                      | 46.5                          | 575.6                                     | 263.3                                  | 7.0            | 1.000010                  |
| 20000.0                        | 28.4                  | -54.2                                    |                      | 45.2                          | 576.5                                     | 264.4                                  | 7.8            | 1.000010                  |
| 20500.0                        | 27.8                  | -53.5                                    |                      | 44.0                          | 577.4                                     | 267.0                                  | 7.8            | 1.000010                  |
| 21000.0                        | 27.1                  | -52.7                                    |                      | 42.9                          | 578.4                                     | 269.6                                  | 7.8            | 1.000010                  |
| 21500.0                        | 26.5                  | -52.0                                    |                      | 41.8                          | 579.3                                     | 263.2                                  | 7.9            | 1.000009                  |
| 22000.0                        | 25.9                  | -51.3                                    |                      | 40.7                          | 580.3                                     | 249.2                                  | 8.4            | 1.000009                  |
| 22500.0                        | 25.3                  | -51.0                                    |                      | 39.7                          | 580.7                                     | 237.5                                  | 9.3            | 1.000009                  |
| 23000.0                        | 24.7                  | -50.7                                    |                      | 38.7                          | 581.1                                     | 230.7                                  | 10.0           | 1.000009                  |
| 23500.0                        | 24.2                  | -50.4                                    |                      | 37.8                          | 581.5                                     | 223.8                                  | 10.5           | 1.000008                  |

GEODETIC COORDINATES  
32.68497 LAT DEG  
106.49714 LONG DEG

UPPER AIR DATA  
2340220000  
NW 30

STATION ALTITUDE 4010.40 FEET MSL  
11 OCT 79 0050 HRS MST  
ASCENDING NO. 8

TABLE 13 (CONT)

| GEODETIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR<br>DEGREES<br>CENTIGRADE | RELATIVE<br>HUMIDITY<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>M/SEC | WIND DATA<br>DIRECTION,<br>DEGREES (T) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|----------------------------------|-----------------------|---|---------------------------------|------------------------------|----------------------------|--|----------------|---------------------------|
| 04000.0                          | 23.6                  | -50.1                                       |                                 | 30.9                         | 501.9                      | 221.4                                  | 11.1           | 1.000008                  |
| 04500.0                          | 23.1                  | -49.0                                       |                                 | 30.0                         | 502.2                      | 222.4                                  | 10.2           | 1.000008                  |
| 05000.0                          | 22.5                  | -49.5                                       |                                 | 30.1                         | 502.6                      | 224.0                                  | 9.0            | 1.000008                  |
| 05500.0                          | 22.0                  | -49.2                                       |                                 | 34.3                         | 503.0                      | 228.0                                  | 7.8            | 1.000008                  |
| 06000.0                          | 21.5                  | -48.9                                       |                                 | 33.4                         | 503.4                      | 235.0                                  | 6.4            | 1.000007                  |
| 06500.0                          | 21.0                  | -48.6                                       |                                 | 32.6                         | 503.7                      | 240.3                                  | 5.2            | 1.000007                  |
| 07000.0                          | 20.6                  | -48.3                                       |                                 | 31.0                         | 504.1                      | 252.9                                  | 4.2            | 1.000007                  |
| 07500.0                          | 20.1                  | -48.1                                       |                                 | 31.1                         | 504.5                      | 292.3                                  | 3.1            | 1.000007                  |
| 08000.0                          | 19.6                  | -48.0                                       |                                 | 30.4                         | 504.6                      | 350.0                                  | 3.3            | 1.000007                  |
| 08500.0                          | 19.2                  | -48.0                                       |                                 | 29.7                         | 504.6                      | 350.4                                  | 3.7            | 1.000007                  |
| 09000.0                          | 18.8                  | -47.9                                       |                                 | 29.0                         | 504.7                      | 353.4                                  | 2.2            | 1.000006                  |
| 09500.0                          | 18.3                  | -47.9                                       |                                 | 26.3                         | 504.7                      | 10.0                                   | .7             | 1.000006                  |
| 10000.0                          | 17.9                  | -47.9                                       |                                 | 27.7                         | 504.7                      | 187.7                                  | 1.1            | 1.000006                  |
| 10500.0                          | 17.5                  | -47.8                                       |                                 | 27.1                         | 504.8                      | 205.9                                  | 3.6            | 1.000006                  |
| 11000.0                          | 17.1                  | -47.8                                       |                                 | 26.5                         | 504.8                      | 209.1                                  | 6.1            | 1.000006                  |
| 11500.0                          | 16.7                  | -47.8                                       |                                 | 25.9                         | 504.8                      | 210.4                                  | 8.7            | 1.000006                  |
| 12000.0                          | 16.3                  | -47.8                                       |                                 | 25.3                         | 504.9                      | 208.0                                  | 10.5           | 1.000006                  |
| 12500.0                          | 16.0                  | -47.7                                       |                                 | 24.7                         | 504.9                      | 207.2                                  | 12.4           | 1.000005                  |
| 13000.0                          | 15.6                  | -47.7                                       |                                 | 24.1                         | 504.9                      | 206.2                                  | 14.2           | 1.000005                  |
| 13500.0                          | 15.3                  | -47.7                                       |                                 | 23.6                         | 505.0                      | 207.3                                  | 14.9           | 1.000005                  |
| 14000.0                          | 14.9                  | -47.7                                       |                                 | 23.0                         | 505.0                      | 210.5                                  | 14.5           | 1.000005                  |
| 14500.0                          | 14.6                  | -47.6                                       |                                 | 22.5                         | 505.0                      | 213.0                                  | 14.2           | 1.000005                  |
| 15000.0                          | 14.3                  | -47.6                                       |                                 | 22.0                         | 505.1                      | 217.5                                  | 13.8           | 1.000005                  |
| 15500.0                          | 13.9                  | -47.6                                       |                                 | 21.5                         | 505.1                      | 224.4                                  | 13.1           | 1.000005                  |
| 16000.0                          | 13.6                  | -47.6                                       |                                 | 21.0                         | 505.1                      | 231.9                                  | 12.6           | 1.000005                  |
| 16500.0                          | 13.3                  | -47.5                                       |                                 | 20.5                         | 505.2                      | 239.9                                  | 12.3           | 1.000005                  |
| 17000.0                          | 13.0                  | -47.5                                       |                                 | 20.1                         | 505.2                      | 240.5                                  | 12.1           | 1.000004                  |
| 17500.0                          | 12.7                  | -47.2                                       |                                 | 19.6                         | 505.5                      | 237.3                                  | 11.9           | 1.000004                  |
| 18000.0                          | 12.4                  | -47.0                                       |                                 | 19.1                         | 505.9                      | 234.0                                  | 11.7           | 1.000004                  |
| 18500.0                          | 12.1                  | -46.7                                       |                                 | 18.7                         | 506.2                      | 230.0                                  | 11.5           | 1.000004                  |
| 19000.0                          | 11.9                  | -46.5                                       |                                 | 18.3                         | 506.6                      | 227.1                                  | 11.4           | 1.000004                  |
| 19500.0                          | 11.6                  | -46.2                                       |                                 | 17.8                         | 506.9                      | 223.4                                  | 11.3           | 1.000004                  |
| 100000.0                         | 11.3                  | -45.9                                       |                                 | 17.4                         | 507.2                      | 219.7                                  | 11.3           | 1.000004                  |
| 100500.0                         | 11.1                  | -45.7                                       |                                 | 17.0                         | 507.0                      |  |                | 1.000004                  |
| 101000.0                         | 10.8                  | -45.4                                       |                                 | 16.8                         | 507.9                      |  |                | 1.000004                  |
| 101500.0                         | 10.6                  | -45.1                                       |                                 | 16.2                         | 508.3                      |  |                | 1.000004                  |
| 102000.0                         | 10.4                  | -44.9                                       |                                 | 15.8                         | 508.0                      |  |                | 1.000004                  |

STATION ALTITUDE 4010.40 FEET MSL  
11 OCT. 79 0650 HRS MST  
ASCENSION 110. 8

MANDATORY LEVELS  
2040220000  
11W 30

TABLE 14

| PRESSURE GEOPOTENTIAL |        | TEMPERATURE |                   | REL. HUM. |                        | WIND DATA   |  |
|-----------------------|--------|-------------|-------------------|-----------|------------------------|-------------|--|
| MILLIBARS             | FEET   | AIR DEGREES | DEW POINT DEGREES | PERCENT   | DIRECTION DEGREES (TN) | SPEED KNOTS |  |
| 850.0                 | 4994.  | 18.1        | 5                 | 30.       | 359.2                  | 4.3         |  |
| 800.0                 | 6705.  | 19.6        | -5.9              | 17.       | 352.4                  | 11.8        |  |
| 750.0                 | 8513.  | 16.1        | -8.2              | 18.       | 338.5                  | 13.0        |  |
| 700.0                 | 10418. | 11.5        | -12.0             | 18.       | 298.1                  | 14.4        |  |
| 650.0                 | 12430. | 6.8         | -16.8             | 17.       | 303.0                  | 15.5        |  |
| 600.0                 | 14571. | 3.6         | -19.9             | 18.       | 294.9                  | 8.3         |  |
| 550.0                 | 18868. | -1.0        | -24.0             | 15.       | 8.4                    | 2.6         |  |
| 500.0                 | 19339. | -5.0        | -28.4             | 15.       | 297.2                  | 12.9        |  |
| 450.0                 | 22009. | -13.1       | -34.2             | 15.       | 281.9                  | 13.6        |  |
| 400.0                 | 24910. | -20.0       | -39.9             | 15.       | 269.8                  | 9.2         |  |
| 350.0                 | 28124. | -27.0       | -45.3             | 16.       | 231.3                  | 18.2        |  |
| 300.0                 | 31705. | -35.9       |                   |           | 265.9                  | 10.0        |  |
| 250.0                 | 35778. | -45.4       |                   |           | 324.2                  | 29.3        |  |
| 200.0                 | 40546. | -55.4       |                   |           | 311.8                  | 35.9        |  |
| 175.0                 | 43300. | -61.6       |                   |           | 309.9                  | 55.1        |  |
| 150.0                 | 46401. | -65.1       |                   |           | 309.3                  | 29.8        |  |
| 125.0                 | 49931. | -71.7       |                   |           | 348.0                  | 23.2        |  |
| 100.0                 | 54301. | -71.7       |                   |           | 357.5                  | 15.9        |  |
| 80.0                  | 58822. | -70.9       |                   |           | 14.6                   | 7.7         |  |
| 70.0                  | 61240. | -67.4       |                   |           | 337.0                  | 10.1        |  |
| 60.0                  | 64301. | -64.9       |                   |           | 24.7                   | 7.8         |  |
| 50.0                  | 67977. | -60.6       |                   |           | 280.1                  | 4.3         |  |
| 40.0                  | 72558. | -58.5       |                   |           | 53.2                   | 11.1        |  |
| 30.0                  | 78529. | -55.8       |                   |           | 202.3                  | 5.4         |  |
| 25.0                  | 82335. | -50.8       |                   |           | 233.8                  | 9.7         |  |
| 20.0                  | 87133. | -48.0       |                   |           | 298.0                  | 3.1         |  |
| 15.0                  | 93412. | -47.7       |                   |           | 209.4                  | 14.6        |  |

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.